A Multifaceted Approach to Early Intervention in the Eating Disorders

By

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Abstract

Eating disorders (EDs) are serious mental illnesses that have significant physical, social, and economic impacts. The need for early intervention is crucial, but this is a relatively new field of enquiry, and much is not known about the best way to provide services. Therefore, the overarching aim of this thesis was to progress our understanding of early intervention by presenting a multifaceted approach that builds upon the seminal work of previous early intervention models for EDs. This was achieved by addressing the following issues: (1) the lack of validation for duration of untreated illness in predicting poorer treatment outcomes, (2) the importance of focusing early intervention strategies on removing barriers to treatment seeking, and (3) placing early intervention strategies within primary health care settings to remove barriers to treatment seeking and promote earlier help-seeking.

The lack of validation for the use of duration of untreated illness in predicting poorer treatment outcomes was evaluated using a systematic review and meta-analysis investigating the relationship between duration of illness and treatment outcomes (**Chapter 3**). This study demonstrated a lack of association between duration and treatment outcomes for both anorexia nervosa and bulimia nervosa, suggesting duration does not lead to poorer treatment outcomes and its use to prescribe entry into early intervention programs is problematic.

To examine the importance of focusing early intervention strategies on removing barriers to treatment seeking, a systematic review and meta-analysis investigated the quantitative association on factors (i.e., perceived barriers, characteristics associated with treatment seeking and demographic variables) associated with help-seeking behaviour (**Chapter 4**). This study revealed denial of illness and the inability of others to provide help to be key barriers to treatment seeking. To address the lack of quantitative studies assessing barriers to treatment seeking using standardised and validated measures, **Chapter 6** refined a previously validated assessment tool for barriers to treatment seeking. Confirmatory factor

analyses were conducted, with a 15-item six-factor solution providing the best fit. A range of psychosocial measures had relationships in the expected directions with the questionnaire subscales, with the denial subscale being a unique predictor of treatment seeking.

Chapters 7 and **8** evaluated an early intervention model in EDs focusing on removing barriers to treatment seeking by promoting early and rapid access to treatment. The emerge-ED program is an early intervention strategy in a primary healthcare setting in low socio-economic-status areas in South Australia. A preliminary case series evaluation of emerge-ED (**Chapter 7**) revealed large within-group effect size decreases from baseline to end of treatment across all clinical outcome measures. Given very high rates of missing data at the follow-up time points and many barriers to treatment delivery, **Chapter 8** aimed to replicate findings from the original evaluation in a new cohort of participants. Further, it also aimed to report on participants' views on barriers to treatment seeking and examine how this early intervention model in primary health care evolved to overcome barriers to treatment delivery in low socio-economic-status populations. Results revealed small to moderate effect size decreases for an ED sessional measure, replicating original findings. The most cited barrier to treatment seeking was denial of illness. To overcome barriers to treatment delivery clinicians had to deviate from treatment protocols and refine inclusion and exclusion criteria to better manage the number of referrals.

Overall, findings suggest duration of illness should not be emphasised when developing early intervention strategies for EDs. Instead, early intervention strategies should emphasize the removal of barriers to treatment seeking and the promotion of early help-seeking. The implementation of early intervention strategies in primary health care, such as the emerge-ED model, tackles several barriers to treatment-seeking and promotes early help-seeking. It does so by reducing the number of providers seen, ensuring the detection of eating disorders in individuals who might present to services for the treatment of comorbid

problems, addressing the gap in the transition between child and adolescent services, and focusing on the provision of eating disorder specialist treatment in areas of low socioeconomic status. There is an urgent need for future research to continue to investigate methods to assess, identify and evaluate interventions to remove barriers to treatment-seeking for people with EDs to promote earlier help-seeking.

Declaration

I certify that this thesis: (1) does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; (2) will not be submitted for any other future degree or diploma without the permission of Flinders University; and (3) does not contain any material previously published or written by another person except where reference is made in-text.

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Commonly Used Abbreviations

Abbreviation	Definition
AN	Anorexia nervosa
ATSPPH-SF	Attitudes Towards Seeking Professional Psychological Help- Short Form
BATSH-ED	Barriers Towards Seeking Help for Eating Disorders
BMI	Body mass index
BN	Bulimia nervosa
CBT-T	10-session cognitive behavioural therapy
CIA	Clinical Impairment Assessment
DASS-21	Depression Anxiety and Stress Scale-Short form
DUI	Duration of Untreated Illness
ED	Eating Disorder
ED-15	Eating Disorder-15
EDE-Q	Eating Disorder Examination-Questionnaire
FREED	First Episode and Rapid Early Intervention in Eating Disorders
SES	Socio-Economic-Status

Chapter 1

Overview and Aims of the Research

Background

The core principle of early intervention is to minimise suffering in people affected by a psychological disorder and their families (Currin & Schmidt, 2005). Early intervention is seen as a highly beneficial strategy from both an ethical and economic stance, conferring an added benefit of changing the course of illness by delaying or preventing the development of unfavourable outcomes (Schmidt et al., 2016). For early intervention strategies to be effective, it is essential to detect disorders at an early stage, based on the premise that intervening at the early stages when the duration of untreated illness (DUI) is short, will produce better treatment outcomes than intervening at the later stages when DUI is longer (Pinhas et al., 2014; Treasure et al., 2015). This concept has been extensively examined in the psychosis field, where it has gained widespread acceptance and support for its effectiveness. This widespread success has resulted in the adaptation of the psychosis early intervention model to other mental illnesses, with eating disorders (EDs) being one of them.

EDs are serious mental illnesses marked by disturbances in eating habits and related thoughts and emotions (American Psychiatric Association [APA], 2023), with individuals often exhibiting a strong preoccupation with food and weight, which lead to engagement in extreme behaviours to control their weight (i.e., restricting food intake, binge eating, purging, and over-exercising). The prevalence of EDs has been increasing worldwide, with a recent systematic review finding the prevalence for any eating disorder diagnosis being 5.7% for women and 2.2% for men (Galmiche et al., 2019). Moreover, rates of help-seeking among individuals with EDs are relatively low, with only one in four individuals seeking treatment (Hart et al., 2011), and many barriers to treatment seeking present (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017). Given the serious physical impact of these disorders and their prevalence, it is unsurprising that they are associated with higher health care utilisation than any other mental illness (Striegel-Moore et al., 2008), resulting in significant social and economic costs, with estimated costs in the United States at $USD64.7 billion for the 2018-2019 financial year, or $USD11,808 per affected person (Streatfield et al., 2021). Despite the physical, social, and economic costs as well as the increased prevalence of EDs in recent years, the field has been much slower to embrace early intervention strategies, with much of the research efforts focusing on adapting early intervention models from other illnesses (i.e., psychosis) to the ED context, with little effort to develop an eating disorder specific early intervention model.

McClelland and colleagues (2018) addressed this significant gap in the provision of early intervention services for EDs by developing a novel early intervention service for ED in tertiary health care settings, the First Episode and Rapid Early Intervention Service for Eating Disorders (FREED). FREED was based on principles of early intervention, focusing on optimising early care, with early care defined as an illness duration of less than three years, and reducing DUI by providing shorter waiting lists and rapid evidence-based services. Evaluations of FREED (McClelland et al., 2018; Fukutomi et al., 2020) have revealed promising results regarding weight recovery and ED symptomology, leading to the program's expansion across a range of tertiary mental health centres in the UK (Allen et al., 2020).

The FREED program represents a step in the right direction for the field of EDs, however, it has several limitations that require attention. The most obvious limitation is the use of an arbitrary time frame adapted from the psychosis literature, which lacks validity for its use in the ED context. This arbitrary time frame may be preventing individuals in need of help from receiving it. Given the low rates of help-seeking among this population, early intervention needs to also focus on removing barriers to treatment seeking, in addition to providing evidence-based treatment as early as possible across a variety of settings, not just tertiary health care settings.

Aims of the Current Research

This thesis presents a multifaceted approach to early intervention by building upon the seminal work of the FREED model by addressing three issues. First, the lack of validation for DUI in predicting poorer treatment outcomes. Second, the importance of focusing early intervention strategies on removing barriers to treatment seeking. Third, placing early intervention strategies within primary health care settings as a potential solution to address barriers to treatment seeking and encourage the provision of evidence-based treatment as early as possible. The current issues addressed in this thesis are presented in this order as we first aim to establish whether duration should be emphasised when developing early intervention services or if such services should focus on improving help-seeking behaviours. Second, given the low rates of help-seeking across ED populations, we focus on the importance of removing barriers to treatment seeking by quantitatively summarising the available literature and validating a standardised measure to quantitatively assess barriers to treatment seeking. Lastly, we present an early intervention model aiming to tackle individual and system barriers to treatment seeking as a potential solution to address these issues. To address these issues, this thesis uses four approaches: (1) systematic reviews; (2) meta-analyses; (3) confirmatory factor analyses and (4) primary data analyses.

Summary of Chapters

The topics introduced in this overview are expanded on in a literature review presented in **Chapter 2**. This literature review addresses the rationale for early intervention in eating disorders, by specifically addressing the evidence for duration as a predictor of treatment outcomes, the rationale for focusing early intervention in EDs on the removal of barriers to treatment seeking and lastly, the rationale for early intervention for EDs in primary healthcare settings.

There is a lack of validation for the use of duration as a predictor of treatment outcomes in EDs, with this being a key focus of current early intervention models. Hence, the research presented in **Chapter 3** involved a systematic review and meta-analyses investigating duration as a predictor of treatment outcomes in ED. Our meta-analyses revealed no association between duration and treatment outcome, highlighting the potential harm of using duration as an entry criterion into treatment programs. This study has been published in the *International Journal of Eating Disorders* (Radunz et al., 2020).

Given the low rates of treatment-seeking among individuals with EDs, an effective approach to early intervention may involve gaining a better understanding of the barriers that prevent individuals with EDs from seeking treatment, so that help-seeking behaviour can be promoted, regardless of the duration of their disorder. The literature on barriers to treatment-seeking for EDs is an emerging body of research, with three systematic reviews examining the topic to date (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017). However, currently, no review has investigated the quantitative association between barriers to treatment-seeking and actual help-seeking behaviour. Thus, **Chapter 4** involved a systematic review and series of meta-analyses aiming to quantitatively synthesise the literature on barriers to treatment seeking. Perceived barriers, individual characteristics and demographic variables were synthesised into 24 unique variables. Two perceived barriers, namely denial and the inability of others to provide help, were associated with less help-seeking behaviour. This study has been published in the *International Journal of Eating Disorders* (Radunz et al., 2022).

Chapter 5 provides a comprehensive outline of all self-reported questionnaire measures utilised in the subsequent chapters (**Chapter 6** to **Chapter 8**). For each measure, a detailed description is provided along with information regarding the measure's psychometric properties and factor structure.

Chapter 6 aims to address the lack of validated measures to assess barriers to treatment seeking in EDs by refining an existing barrier to help-seeking questionnaire. The study examines the factor structure of a barriers to treatment seeking questionnaire for mood disorders, the Perceived Barriers to Psychological Treatment Scale (PBPT; Mohr et al., 2010), and a combination of items from the Barriers to Seeking Help for Eating Disorders (BATSH-ED; Ali et al., 2020) in respect to treatment seeking for EDs. A large sample of university students reporting a full range of disordered eating was included in the analyses. Results suggested a 15-item six-factor solution provided the best model fit of the refined questionnaire, with relationships with a range of psychosocial measures in the expected directions. The denial of illness subscale was a unique predictor of treatment seeking. This study was published in *Early Intervention in Psychiatry* (Radunz & Wade, 2023).

Chapter 7 presents a case series evaluation of an early intervention service for EDs in a primary health care setting across two low socio-economic-status (SES) areas in South Australia. The study presents findings on the feasibility of the program (emerge-ED), discusses barriers to treatment delivery and change over time in ED symptoms and other clinical outcome measures. Results revealed large within-group effect size decreases from baseline to end of treatment across all clinical outcomes, suggesting individuals from low SES can achieve comparable treatment outcomes to other populations, despite reporting more barriers to treatment seeking. Moreover, the large rates of missing data for the routine assessment in comparison to the sessional measure suggested data collection using sessional measures may be more feasible with this population. This study has been published in the *International Journal of Eating Disorders* (Radunz et al., 2021).

Chapter 8 aimed to replicate findings from the initial evaluation of the emerge-ED program by evaluating treatment outcomes in a new cohort of participants and reporting on their views on barriers to treatment seeking, as well as how the intervention model in primary health care has evolved to overcome the barriers to treatment delivery cited by clinicians in the initial evaluation. Results replicated initial findings from the initial emerge-ED evaluation (**Chapter 7**) and participants' most cited barrier to treatment seeking was "belief that my problem is not bad enough", reflective of denial of illness. This chapter has been submitted for publication in *Early Intervention in Psychiatry*.

The key findings from the research outlined in this thesis are summarised and integrated into an overall summary and synthesis of findings (**Chapter 9**), discussing clinical implications, overall limitations, and general future directions for research.

Reader Navigation

In this thesis, four out of five studies have been published in peer-reviewed journals. The study described in **Chapter 8** was submitted to a peer-reviewed journal, with the recommended changes from reviewers implemented into the chapter. **Chapters 2, 3, 4, 6, 7** and **9** contain content from the four published papers and the versions presented in this thesis are like the published papers. However, the introduction sections of these chapters have been shortened to reduce repetition, and additional information from supplementary analyses and materials has been included in the chapters. The discussion sections of each chapter are focused on explaining the results, placing these in the broader context and outlining study-specific limitations. All clinical implications and recommendations for future research are presented in the general discussion chapter (**Chapter 9**). All references can be found collectively at the end of **Chapter 9**, together with the appendices. Tables and figures are integrated into the main body of each chapter and appear when they are first mentioned.

Despite attempts to minimise repetition, there is still some repetition in the introductory sections of each chapter to support study objectives and in the discussion sections when discussing the implications of the results. The literature review, found in

Chapter 2, has not been published in its current state, but does incorporate material from the introductory sections of both published and unpublished papers. Lastly, I played a leading role in the research design, data collection and analysis, as well as the writing and editing of all studies presented in this thesis. However, to acknowledge the contributions of my supervisors and co-authors, the pronoun “we” has been used throughout this thesis.

Published Papers

Radunz, M., & Wade, T. D. (2023). Towards an understanding of help-seeking behaviour for disordered eating: Refinement of a barriers to help-seeking measure. *Early intervention in psychiatry* Online ahead of print. doi: 10.1111/eip.13394

Radunz, M., Ali, K., & Wade, T. D. (2022). Pathways to improve early intervention for eating disorders: Findings from a systematic review and meta-analysis. *International Journal of Eating Disorders*. https://doi.org/10.1002/eat.23845

Radunz, M., Pritchard, L., Steen, E., Williamson, P., & Wade, T. D. (2021). Evaluating evidence-based interventions in low socio-economic-status populations. *International Journal of Eating Disorders*, 54(10), 1887-1895.https://doi.org/10.1002/eat.23594

Radunz, M., Keegan, E., Osenk, I., & Wade, T. D. (2020). Relationship between eating disorder duration and treatment outcome: Systematic review and meta-analysis. *International Journal of Eating Disorders*, *53*(11), 1761-1773. https://doi.org/10.1002/eat.23373

Conference Presentations

Radunz, M., & Wade, T. D. (2022). *Towards an Understanding of Help-seeking Behaviour for Disordered Eating: Refinement of a Barriers to Help-Seeking Questionnaire*. Oral Presentation at the Australia and New Zealand Academy for Eating Disorders Conference; Sydney, Australia.

Radunz, M., Pritchard, L., Steen, E., Williamson, P., & Wade, T. D (2021). *Case Series Evaluation of an Early Intervention Program for Eating Disorders in Low Socio-Economic-Status Populations*. Online oral presentation at the Australian and New Zealand Academy for Eating Disorders Conference; Perth Australia.

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Chapter 2

Literature Review[1]

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[1] This chapter contains content from the Introduction sections of four published papers that are provided in **Appendices A** to **D**.

Radunz, M., Keegan, E., Osenk, I., & Wade, T. D. (2020). Relationship between eating disorder duration and treatment outcome: Systematic review and meta-analysis. *International Journal of Eating Disorders*, *53*(11), 1761-1773. https://doi.org/10.1002/eat.23373

Radunz, M., Ali, K., & Wade, T. D. (2022). Pathways to improve early intervention for eating disorders: Findings from a systematic review and meta-analysis. *International Journal of Eating Disorders*. https://doi.org/10.1002/eat.23845

Radunz, M., & Wade, T. D. (2023). Towards an understanding of help-seeking behaviour for disordered eating: Refinement of a barriers to help-seeking measure. *Early intervention in psychiatry* Online ahead of print. doi: 10.1111/eip.13394

Radunz, M., Pritchard, L., Steen, E., Williamson, P., & Wade, T. D. (2021). Evaluating evidence-based interventions in low socio-economic-status populations. *International Journal of Eating Disorders*, 54(10), 1887-1895.https://doi.org/10.1002/eat.23594

The Rationale for Early Intervention for Mental Health Disorders

Mental health disorders are increasing worldwide, with the COVID-19 pandemic exacerbating this trend (Hossain et al., 2020). There has been a 13% rise in mental health conditions and substance use disorders in the last decade, with the former conditions now causing one in five years lived with disability, which refers to years spent in states of less than full health (World Health Organization, 2023). Mental health disorders are now the most common and burdensome condition in children and adolescents in Australia, with almost one in seven children and adolescents aged 4-17 years experiencing a mental illness (Australian Institute of Health and Welfare, 2022), and suicide being the second leading cause of death among those aged 15-29 years worldwide (World Health Organization, 2023). On a global scale, mental health disorders result in significant human suffering, disability, and mortality. However, the availability of prompt, evidence-based treatment to reduce the associated human and economic burden of these mental health disorders is inadequate, with the field lacking momentum in early intervention strategies (Richards et al., 2019).

Early intervention is widely perceived as a highly beneficial strategy from both an ethical and economic stance, conferring an added benefit of changing the course of illness by delaying or preventing the development of unfavourable outcomes (Schmidt et al., 2016). The core principle of early intervention is to minimise suffering in people affected by a psychological disorder and their families (Currin & Schmidt, 2005). To achieve this, early intervention relies on the proactive process of screening, early detection, and provision of effective and rapid evidence-based treatment (Rickwood, 2000). Early intervention has been argued to be the blurring of the boundaries between wellness and illness, where early intervention must occur during the early stages of the disorder, when signs and symptoms suggest the individual is at-risk or indicating a first episode of mental illness (Davis et al., 2000).

For early intervention to be effective, it is crucial to detect disorders at an early stage. The premise is that intervening at the early stages of illness, when the duration of untreated illness (DUI) is short, produces better treatment outcomes than intervening at later stages when DUI is longer (Pinhas et al., 2014; Treasure et al., 2015). The concept of DUI, which refers to the period between onset of illness and the initiation of evidence-based treatment, has been extensively examined in psychosis as part of a staging approach (McGorry et al., 2008; McGorry, 2015; Correll et al., 2018), where researchers have developed a critical period hypothesis, based on the premise that early phase psychosis, defined by a DUI of three to five years, has important clinical implications, due to the rapid progression of illness following first episode psychosis, thus making the disorder less responsive to treatment (Birchwood, Todd, & Jackson, 1998).

The concept of early intervention has gained widespread acceptance in the field of psychosis, where increasing evidence supports its effectiveness (Stafford et al., 2013). This success has paved the way for the application of this model to other mental health disorders, with eating disorders (EDs) being one of them (Treasure et al., 2015).

Early Intervention in Eating Disorders

EDs are serious mental illnesses that are characterized by disturbances in eating behaviour and related thoughts and emotions (American Psychiatric Association [APA], 2023). Individuals with EDs display a preoccupation with food and weight and may engage in extreme behaviours to control their weight, such as restricting their food intake, binge eating, purging, and over-exercising (APA, 2023). These behaviours can lead to physical and psychological harm, including malnutrition, electrolyte imbalances, gastrointestinal problems, heart problems and are also associated with high levels of comorbidity, including depression and anxiety, as well as suicidality (Swinbourne & Touyz 2007), with anorexia nervosa (AN) having the highest mortality rate of any mental illness (Smink et al., 2012). It is also important to acknowledge sociocultural norms that glorify eating disorders and diets, along with weight bias and stigma, which complicate early detection efforts in identifying individuals at risk, thus highlighting the need for comprehensive approaches to address these challenges in effective early intervention strategies for eating disorders.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition Text Revision (DSM-V-TR; APA, 2022) lists the following specified eating disorders: AN, bulimia nervosa (BN), avoidant/restrictive food intake disorder (ARFID) and binge eating disorder (BED). AN is a potentially life-threatening ED characterised by a persistent restriction of energy intake leading to significantly low body weight, intense fear of gaining weight, and a distorted body image. The DSM-V specifies two subtypes: the restricting type, where the individual restricts food intake and doesn’t engage in binge eating or purging behaviours, and the binge-eating/purging type, where the individual also engages in recurrent episodes of binge eating and/or purging. BN is an eating disorder characterized by recurrent episodes of binge eating followed by compensatory behaviours, such as purging, fasting, or excessive exercise, to prevent weight gain. ARFID is characterised by the persistent failure to meet appropriate nutritional or energy needs, resulting in significant weight loss, nutritional deficiencies, dependence on enteral feeding or oral supplements, impaired psychosocial functioning, and absence of body image disturbance or fear of weight gain commonly seen in other eating disorders. BED is characterised by recurrent episodes of binge eating without compensatory behaviours. The DSM-V specifies that these episodes involve eating a larger amount of food than most people would eat in a similar time period, feeling a lack of control over eating during the episode, and experiencing significant distress afterwards. To meet the diagnostic criteria for BED, these symptoms must occur at least once a week for three months and cause significant impairment in functioning. When symptoms do not meet full diagnostic criteria for one of the specified eating disorders but are leading to significant distress and/or impairment, a diagnosis of Other Specified Feeding or Eating Disorder (OSFED) is made. Examples of OSFED include atypical AN, which involves significant weight loss and restrictive eating behaviours that do not meet the criteria for AN due to weight; purging disorder, which involves recurrent purging behaviours without binge eating.

EDs are highly prevalent worldwide (Silen & Keski-Rahkonen, 2022), and their incidence has been increasing over the last two decades, with a recent systematic review (Galmiche et al., 2019) finding the prevalence for any ED diagnosis to be 5.7% for women and 2.2% for men. Non-underweight EDs are more prevalent than AN, with OSFED accounting for up to 53% of all community cases (Machado et al., 2013) and making up around 32% of people presenting for eating disorder treatment (Trompeter et al., 2021). Given the serious physical impacts of EDs and their prevalence, it is not surprising that they are associated with higher health care utilisation than any other mental illness (Striegel-Moore et al., 2008), resulting in high social and economic costs, with a recent study estimating the total costs for EDs in the United States at around $USD64.7 billion for the 2018-2019 financial year, equivalent to $USD11,808 per affected person (Streatfield et al., 2021).

The goal of early intervention has been made more difficult with the onset of the COVID-19 pandemic, which led to a significant increase in ED symptomatology across a range of different populations (Zhou & Wade, 2021; Devoe et al., 2022), with an estimated increased incidence of EDs of 15.3% in 2020 (Taquet et al., 2022). The COVID-19 pandemic has further compounded the issue of lengthy waitlist, with increased ED prevalence and relapse rates (Castellini et al., 2020; Graell et al., 2020; Taquet et al., 2022). Information gathered from 25 eating disorder services across Australia revealed increased demand for community and inpatient programs, with people waiting many months to access care and treatment (National Eating Disorder Collaboration, 2020). This reflects international figures showing quadrupled waiting times for treatment since 2019/2020 (Nuffield Trust, 2022), a 270% increase in people waiting for urgent treatment, and a 315% increase in people waiting for routine treatment (Iacobucci 2021).

Despite the serious physical, social and economic impacts of EDs, as well as the emerging barriers to early intervention, the ED field has been much slower to embrace the concept of early intervention, with much of the literature aiming to adapt the psychosis model to the ED context. Schmidt and Currin (2005) were the first to propose an early intervention approach to EDs by investigating how early intervention could alter the course of EDs. They concluded that findings for predictors of outcome in anorexia nervosa (AN) support the notion of early intervention being successful prior to weight loss becoming too severe when the biological impact of starvation is more deeply embedded in the developing brain. Similarly, Treasure and Russell (2011) examined data from the Maudsley Model of Family Therapy for AN, finding those who had a longer mean duration of illness had poorer outcomes at five-year follow up, demonstrating early intervention to be vitally important prior to the illness becoming too entrenched. Further, the authors equated the needs of people with AN to those of individuals with psychosis, highlighting the important need to reduce the DUI early in the treatment of AN (Treasure & Russell, 2011).

Although little evidence is available to support time frames for an early intervention model in AN, Treasure, Stein, and Maguire (2015) suggest that early stage should be defined as an illness lasting no longer than three years and that an illness lasting for longer than seven years should be classified as severe and enduring (SEED). Based on these findings, Schmidt, and colleagues (2016) developed the First Episode and Rapid Early Intervention service for Eating Disorders (FREED), highlighting the evidence for a stage-model of illness, defining early stage as an illness duration of less than three years.

McClelland and colleagues (2018) addressed a significant gap in the field of EDs by developing a novel early intervention service in a tertiary health care setting. FREED was based on principles of early intervention, focusing on optimising early care, and reducing duration of untreated illness by providing shorter waiting lists and rapid evidence-based services. At 12-month follow up findings revealed that 60% of patients returned to a healthy body mass index (BMI) and 70% no longer met clinical cut-off for an ED (McClelland et al., 2018). A follow-up study revealed that at 24-months, 71% of FREED patients returned to a healthy BMI, with 59% of patients maintaining weight recovery throughout the course of treatment (Fukutomi et al., 2020). The program has now been introduced across a range of tertiary mental health centres in the UK (Allen et al., 2020), with a more recent multi-centre study suggesting significant improvements across clinical outcomes, as well as a reduction in inpatient admissions (Austin et al., 2022). A cost savings analysis of FREED (Austin et al., 2022) revealed those who received the FREED intervention had lower intensive treatment utilization compared to those who received treatment as usual (TAU), resulting in an average cost saving of £4472 per patient (Austin et al., 2022).

The FREED program represents a step in the right direction for the field of EDs, however, it has several limitations that require attention. The program encourages early access to treatment and shorter waiting times, which is an important step forward in the management of EDs, particularly given lengthy waitlists due to the COVID-19 pandemic (Castellini et al., 2020; Graell et al., 2020; Taquet et al., 2022). However, the program's use of an arbitrary time frame from another disorder, which lacks validation and consensus, is highly problematic. This may be impacting on the program's efficacy and preventing those in need of treatment from receiving it. Moreover, FREED places a particular emphasis on AN, which does not accurately reflect the prevalence of ED diagnoses (Machado et al., 2013; Trompeter et al., 2021). Thus, the needs of individuals with non-underweight eating disorders may not be fully addressed by FREED’s focus on weight restoration as opposed to nutritional restoration. FREED’s use of an arbitrary time frame together with its focus on AN may be creating more barriers to treatment seeking rather than focusing on removing barriers to treatment seeking and meeting the needs of those who require early intervention services for EDs. Given the low rates of help-seeking among this population, early intervention needs to also focus on removing barriers to treatment seeking, in addition to providing evidence-based treatment as early as possible across a variety of settings, not just tertiary health care settings.

A Multifaceted Approach to Early Intervention in EDs

Therefore, this thesis presents a multifaceted approach to early intervention by building upon the seminal work of the FREED model by addressing the following issues: (1) the lack of validation for DUI in predicting poorer treatment outcomes, (2) the importance of focusing early intervention strategies on removing barriers to treatment seeking, (3) placing early intervention strategies within primary health care settings. Each of these three issues and the impact on informing early intervention services for EDs are discussed in more detail in the following sections of this literature review.

Duration as a Predictor of Treatment Outcome

The FREED intervention model is heavily influenced by early intervention in psychosis. The evidence for intervening during the early stages is robust in the field of psychosis, as treatment outcomes are poorer for those who have had a longer duration of illness (Cechnicki et al., 2014). However, contrary to the psychosis literature, the evidence suggesting DUI leads to poorer outcomes in the treatment of EDs is very inconsistent with a lack of consensus. To adapt the psychosis model to EDs, it has been suggested that the categorization of severe and enduring eating disorders (SEEDs) has the potential to assist in assessment and inform treatment for AN, however, no consensus exists in the literature in terms of numbers of years that define SEED. Across the literature SEEDs have been defined as a duration of ten (Arkell & Robinson, 2008), three (Hay, Touyz, & Sud, 2012), seven (Touyz et al., 2013), five (Andries et al., 2014), and twenty to forty years (Robinson et al., 2015). Between two studies (Raykos et al., 2018; Calugi et al., 2017a) measuring duration, it was found that duration did not predict treatment outcomes for AN. In a more recent study (Ambwani et al., 2020) on individuals diagnosed with anorexia nervosa, recruited from 22 National Health Service ED outpatient services in the United Kingdom, the researchers analysed the response to treatment based on two groups: early stage (less than three years) and severe and enduring (seven years or more) characterized by elevated levels of negative affect such as depression and anxiety. The study found that there were no significant differences between the two groups in terms of improvements in body mass index (BMI) or overall eating disorder psychopathology. However, the severe and enduring group exhibited lower rates of improvement in work and social adjustment.

In addition, one systematic review (Linardon, de la Piedad Garcia, & Brennan, 2017) and two systematic review and meta-analyses (Gregersten et al., 2019; Vall & Wade, 2015), have explored duration of illness as a predictor of treatment outcomes, with mixed findings across the reviews. Vall and Wade's (2015) meta-analysis confounded age of onset with duration of illness, finding small effect sizes to support those with an older age of onset and/or shorter duration of illness having better outcomes at end of treatment (mean $r = 0.19$) and follow up (mean $r = 0.16$). On the other hand, Linardon et al. (2017) examined predictors of outcome following manualised Cognitive Behaviour Therapy (CBT) for EDs, identifying three studies measuring duration of illness as a predictor, with only one showing evidence for duration leading to poorer treatment outcomes. Gregersten et al. (2019) used a meta-analysis to look at predictors of outcome in the treatment of AN, revealing a non-significant association of duration on treatment outcomes (mean $r = .02$). Lastly, a more recent systematic review (Austin et al., 2020) examined the relationship between duration of untreated ED and treatment outcomes, finding only one study (Andrés-Pepiñá et al., 2020), to investigate the long-term outcome of AN patients 22 years after initial diagnosis and treatment, revealing those who still had an ED diagnosis at follow-up to be significantly more likely to have a longer duration of untreated ED compared to those in remission (OR: 3.33; 95% CI: 1.3-8.7). The current literature lacks sufficient evidence regarding the association between duration of illness and treatment outcomes. As a result, there is a lack of support for the use of a staging model of illness as the basis for entry criteria in early intervention services. This absence of evidence diverts research attention from exploring alternative models that aim to provide timely interventions.

Removing Barriers to Treatment Seeking in Eating Disorders

Rather than focusing on DUI and a staging-approach, a more fruitful approach to early intervention may be gaining a better understanding of what barriers prevent individuals with EDs from accessing treatment at the earliest possible moment. This requires improving help-seeking behaviour, regardless of the duration of the disordered eating. Even before the COVID-19 pandemic, only one in four individuals with an ED received treatment (Hart et al., 2011), with an average length of 5.28 years delay between onset of ED symptoms and treatment-seeking (Hamilton et al., 2021). This is of concern given that EDs typically emerge between the ages of 15 to 23 years, with a median of 18 years (Solmi et al., 2022), a sensitive period for the still-developing brain (Schmidt et al., 2016). Sustained periods of disordered eating in adolescence increases risk for a range of psychological and medical disorders in later adulthood, including anxiety, depression, cardiovascular symptoms, chronic fatigue, pain, limited activity due to poor health, infectious diseases, insomnia, substance use, deliberate self-harm, obesity, and neurological symptoms (Johnson et al., 2002; Micali et al., 2015) which have the potential to adversely impact social support networks, and delay important development hurdles. For these reasons developing effective early intervention approaches needs to be a priority in the field of ED. Identifying what prevents individuals with EDs from seeking treatment early needs to be examined to develop approaches to dismantling barriers to treatment seeking at the earliest point possible.

The research on barriers to treatment seeking is an emerging body of literature, with three systematic reviews (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017) conducted on the topic to date. Common themes were identified across the reviews, but many limitations and inconsistencies were also found across the literature. In total, 18 studies were identified across the three reviews, with a total of ten qualitative studies, six quantitative studies and two mixed methods studies. **Table 2.1** summarises findings from the 18 studies identified across the three systematic reviews. Innes et al. (2017) identified shame and stigma, service-related factors, and cost of treatment as the most common barriers. Similarly, Ali et al. (2017) review found stigma and shame, denial and/or failure to perceive the severity of illness and practical barriers, such as access to treatment, cost, and lack of time, as the most salient barriers to treatment seeking. Regan et al. (2017) review found an array of individual and system level factors to affect treatment seeking in ED populations. The most common individual barriers included shame or fear of change, fear of being judged by others and the perception that the ED is not serious enough to warrant treatment, whilst the most common system level barriers were financial considerations, problems with access and availability and lack of knowledge about treatment.

Table 2.1.

Summary of the 18 studies identified across Ali et al. (2017), Innes et al. (2017) and Reagan et al. (2017) systematic reviews.

Study	Design	Sample	n	Age group (M, SD)	Outcome Measure	Top cited Barriers
			Ali et al., (2017)			
Akey et al. (2013) (USA)	Qualitative	ED (not specified)	34	M = 25 (SD = 8.3)	Interviews	Lack of access to sources of support, lack of social support, financial barriers, concern for social stigma, placing concern for others above concern for oneself
Becker et al. (2010) (USA)	Qualitative	Sub-clinical symptoms, weight/shape concerns	32	College age 18 +	Semi-structured, open-ended, telephone interview	(1) Stigma/shame (2) Ethnic/social stereotypes (3) Access to care (availability and affordability)
Evans et al. (2011) (Australia)	Qualitative	BN, BED, EDNOS	57	M^{age} = 33; SD =NR	Telephone interview	Insufficient time from health professionals, cost, lack of personal time, strict service entry criteria, low motivation to change, stigma
Gullisken et al. (2014) (Norway)	Qualitative	AN	34	M^{age} = 28, SD = NR	Semi-open participant centred interview	Facilitators identified: wish to become a better anorectic, wish to feel less

						depressed, wish to reduce somatic concerns
Hepworth et al. (2007) (Australia)	Qualitative	BN, BED, AN, EDNOS	63	M^{age} = 38.8 (SD = 12.28)	Semi-structured interview	Fear of stigma, low mental health literacy, shame, fear of change, cost
Leavy et al. (2011) (UK)	Qualitative	AN, BED, BN	13	M^{age} = NR	Interviews	Psychosocial factors (e.g. ED as coping mechanism, part of identity, not problematic, fear of stigma/change) Service-related and practical barriers (eg. waiting times, cost, negative previous experience with health service)
Reys-Rodriguez et al. (2013) (USA)	Qualitative	History or current ED or subthreshold symptoms	5	M^{age} = 31.2	In-depth interviews	Lack of information about ED, economic barriers, emotional/personal barriers, cultural stigmas
Schoen et al. (2011) (USA)	Qualitative	Past or current diagnosable ED	14	M^{age} = 23	In-depth semi structured interview	Denial of illness/severity, lack of awareness, shame
Becker et al. (2004) (USA)	Quantitative	University students from NEDSP	289	M^{age} = 24.7 (SD = 10.2)	Structured interview	(1) Can handle problem own (2) Inconvenience (3) Problem not serious
Maier et al. (2014) (Germany)	Quantitative	AN	36	M^{age} = 19.3 (SD = 2.0)	Questionnaire on Stigmatization in patients with	Stigma and self-stigma/discrimination

					Anorexia Nervosa (QSAN;Maier et al., 2014)	
Meyer et al. (2001) (USA)	Quantitative	High school females diagnosed ED and disordered eating	283	M^{age} = 17.8	Survey (Q-EDD, ATSPPH-SF, self-developed questions for HS)	(1) Do not want anyone to know (2) problem not worrisome enough for me (3) Do not believe I have a problem
Cachelin et al. (2001) (USA)	Mixed Method	BED, BN, AN, EDNOS	61	M^{age} = 30.5	Self-developed questions on barriers	(1) Financial difficulties (2) Lack of insurance (3) Others unable to help
Cachelin et al. (2006) (USA)	Mixed Method	AN, BN, BED, EDNOS	145	M^{age} = 27.8	Self developed questions on barriers	Shame, not knowing where to go for help, belief in helping self, fear of labelling, belief problem not serious enough
Innes et al., (2017)						
Crawford (1998) * (USA)	Quantitative	BN	49	M^{age} = 23.2 (SD = 7.6)	10-point Rating scale on degree each barrier influenced HS	Belief eating is not a serious problem, belief that treatment would not help, would rather solve problem on my own
Dearden and Mulgrew (2013) (Australia)	Qualitative	Males with disordered eating	5	Range 22-58	Questionnaire, open-ended questions	A lack of knowledge about symptoms, nature of the problem, lack of awareness of Eds and lack of knowledge about treatment options

Pepper (2009)* (USA)	Quantitative	Disordered eating population	106	M^{age} = 20.08 (SD = 3.59)	Self-report; 5-point Likert scale rating level of agreement with 26 reasons for not HS	Not knowing where to go for help, unaware of available treatments, problem isn't serious enough, I should be able to help myself
			Regan et al., (2017)			
Escobar-Koch et al. (2010) (UK)	Qualitative	ED self-report	294	M^{age} = 28.3	Self report: "top-five concerns about ED treatments as they are practiced at the moment"	(1) Lack of access to services (cost, waitlist, stringent entry criteria) (2) Insufficient support and knowledge of ED by health care providers (3) unhelpful therapeutic approaches
Lipson et al. (2016) (USA)	Mixed Method	ED self-report	558	18 or older	Self-report: selection of up to 3 reasons from a list of 19 reasons "why you have no received therapy for your eating/and or body image concerns"	(1) No need for treatment (2) Prefer to deal with issues on own (3) Not sure how serious needs are (3) No time

Note: M^{age} = mean age; SD = standard deviation; NR = not reported; ED = eating disorder; AN = anorexia nervosa; BN = bulimia nervosa; BED = binge eating disorder; EDNOS = eating disorder not otherwise specified; * Dissertation; NR = Not reported; HS = help-seeking; ATSPPH-SF = Attitudes Towards Seeking Professional Psychological Help – Short Form; Q-EDD = Questionnaire for Eating Disorder Diagnosis

Although common themes are present across reviews, it is important to note the many limitations across studies in this literature, the most noticeable limitation being the paucity of quantitative studies available (Ali et al., 2017; Innes et al., 2017), together with the lack of use of standardised measures. The few quantitative studies available did not measure barriers to treatment using previously standardised measures, but instead developed their own measures without justification for their choice of items and in turn failed to report on the psychometric properties of these measures (Innes et al., 2017). Similarly, most studies did not use an appropriate or validated measure of treatment-seeking, with many studies classifying participants as “treatment seekers” or “non-treatment seekers” based on self-report to open-ended questions. Regan et al. (2017) have suggested the development of a standardised treatment seeking measure for eating disorders is needed to improve the quality of this body of research. Furthermore, as noted in Innes et al. (2017) and Ali et al. (2017) many of the studies excluded populations with sub-clinical symptoms and failed to examine barriers to treatment seeking among young populations (15-24-year-old), which is particularly problematic given this group displays a high risk of ED pathology, many times going undetected and untreated (Eisenberg et al., 2011). Unsurprisingly, another limitation among studies in the literature include the lack of diversity in regards to ethnicity, whereby 61% of studies presented in Table 2.1 were from the United States, with little research including non-western countries and minority groups.

Since 2017, several quantitative studies examining barriers to treatment seeking have emerged (Ali et al., 2020; Fatt et al., 2019; Fitzsimmons-Craft et al., 2019a; Fitzsimmons-Craft et al., 2019b; Griffiths et al., 2018; Linardon et al., 2020, McLean et al., 2019). However, very limited efforts have been made to improve the quality of research in this area such as by quantitatively synthesising the literature and/or developing and validating an assessment tool for barriers to help-seeking, with only two studies (Innes et al., 2018; Ali et al., 2020) attempting to address the gap in the measurement of barriers to treatment seeking.

Innes et al (2018) aimed to address this important gap by examining the factor structure of the Perceived Barriers to Psychological Treatment scale (PBPT; Mohr et al., 2010), in a disordered eating sample. The PBPT is a 27-item scale originally validated in a sample of individuals with mood disorders, which comprises of eight-factors measuring stigma, lack of motivation, emotional concerns, negative evaluations of therapy, misfit of therapy to needs, time constraints, participation restriction and access to services. Confirmatory factor analysis (CFA) supported a 25-item 7-factor solution to be a valid and reliable method of assessing treatment seeking barriers in the disordered eating samples (*TLI = 0.94, RMSEA = .05 [95% CI: .04., .06*]).

The PBPT, however, was designed for general mental health issues and does not include items relevant to EDs identified in the three systematic reviews, namely denial (failure to perceive severity of illness) and ambivalence. To address this, Ali, and colleagues (2020) developed a help-seeking measure for EDs (Barriers to Seeking Help for EDs [BATSH-ED] with 40 items representing 15 different barriers) informed by themes identified in their 2017 review. However, currently, there is no report on the psychometric properties of this measure. Thus, significant gaps remain in the literature that aim to quantitatively synthesise barriers to treatment seeking and their relationship to help-seeking, as well as in the validation of a standardized measure for the assessment of barriers to treatment-seeking. Addressing these gaps in the literature would allow for an in-depth understanding of what prevents individuals with EDs from seeking help, which may inform development of early intervention programs aiming to remove barriers to help-seeking and promote earlier help-seeking.

The Rationale for Early Intervention Strategies in Primary Health Care

Given many barriers to treatment seeking exist among those with EDs (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017), an early intervention model focusing on not only rapid access to early treatment and shorter waiting times but also aiming to remove barriers to treatment seeking and provide seamless services is warranted. Placing early intervention models in a primary health care setting, as opposed to the FREED model in tertiary health care settings, is one approach to reducing barriers inherent to treatment seeking.

Primary health care, which refers to general medical care provided in community-based settings, is typically the first point of contact for any health-related issues and is where many conditions are diagnosed and treated. However, certain disorders may require specialized treatment, and patients may need to transition or receive co-management across primary and secondary care, which refers to specialist medical care. The coordination between these different levels of health care can be challenging and not a seamless process (Sampson et al., 2018). Many general practitioners (GPs) are not adequately trained in identifying and managing eating disorders, with a UK study revealing eating disorder teaching in medical school equates to less than 2 hours of the 10-16 years of medical training (Ayton & Ibrahim, 2018), resulting in many GPs referring patients to specialist services. However, specialist ED services are often understaffed, overburdened, and unable to accommodate a high volume of patient referrals. As a result, patients with EDs may go untreated, facing long waitlists, inappropriate referrals and worsening of their condition, which may in turn decrease the likelihood of recovery (Johns et al., 2019). Given the low rates of treatment seeking and the numerous barriers faced by individuals with eating EDs, the lack of seamless services becomes particularly problematic. Therefore, it is crucial that when individuals do reach out and seek treatment, they receive services that are as seamless as possible. This will help ensure the prompt initiation of evidence-based treatment at the earliest opportunity.

Another barrier in the current service model for EDs is the transition between services due to age restrictions. Given EDs typically develop during adolescence and early adulthood, many young people are required to transition from child and adolescent mental health services to adult mental health services. A recent systematic review (Wade, 2022) found problematic transitions between age-based services, whereby a substantial number of young people who still require help lose contact with specialty services.

In Australia, headspace youth centres provide a novel opportunity to address the gap in early intervention for EDs, given they are a primary mental health care service for youth 12-25 years of age, thus providing a potential solution to removing barriers to treatment seeking and providing seamless services. The headspace service was established in 2006 by the Australian Government with the aim of providing early intervention and support to young people experiencing mental health issues, such as anxiety, depression, and psychosis (headspace, 2023). In 2022, there are 136 headspace centres, with the aim to reach 164 by the end of 2023 (McGorry et al., 2019). The headspace model provides a youth friendly "one-stop shop" service for young people to access a range of health and social programs, including individual and group counselling, vocational and educational support, drug and alcohol education and interventions, as well as other health promotion and prevention programs (McGorry et al., 2022). One of the key features of headspace is that is provides an integrated approach to mental health care, meaning that young people can access a range of services in one location, without needing a referral from a GP (McGorry, 2007). For those experiencing first episode psychosis, six metropolitan headspace centres have a specific early psychosis program, focusing on reducing the period between onset of illness, commencement of early treatment and promotion of symptomatic recovery (Hughes et al., 2014). Despite headspace having a specific early intervention model for early psychosis within its service, no such services are currently available to address the gap in the provision of ED early intervention services in primary health care.

Conclusions

This literature review establishes that EDs are serious mental illnesses making the need for early intervention crucial. The field of ED has been much slower to embrace early intervention, with much of the literature placing an emphasis in adapting the psychosis model of early intervention to ED, emphasizing how early intervention may alter the course of illness, and whether such an intervention provides lasting outcomes. However, rates of help-seeking in EDs are relatively low (Hart et al., 2011) and many barriers to treatment seeking exist (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017). Early intervention models solely focusing on reducing DUI are problematic, as they may be creating artificial entry criteria for early intervention services that are not based on evidence and may be distracting research from examining different models of care that seek to provide evidence-based treatment as early as possibleTherefore, the overarching aim of this thesis was to provide a multifaceted approach to early intervention in EDs by establishing whether duration of illness should be a focus of early intervention models and examining an early intervention model in EDs focusing on identifying barriers to treatment seeking and emphasizing the need to remove barriers to treatment seeking, to promote early and rapid access to treatment. The investigation of the effectiveness of early intervention strategies aiming to promote early and rapid access to treatment can provide valuable insights into best practices for identifying and addressing eating disorders at an early stage. The findings from this thesis may inform clinicians in designing and implementing early intervention, equip patients and their families with knowledge about the importance of early treatment-seeking, and ultimately contribute to improving outcomes and reducing the long-term impact of eating disorders. Additionally, by highlighting the benefits of early intervention, this work can inform healthcare systems in allocating resources and developing policies that prioritize early intervention for eating disorders (i.e., placing services in primary health care). In this way this thesis contributes to the development of an early intervention model fit for purpose for people with EDs.

Chapter 3

Relationship between eating disorder duration and treatment outcome: Systematic review and meta-analysis[2]

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[2] The study described in this chapter was published and can be found in **Appendix A**. Marcela Radunz contributed 60%, 40% and 40%, Ella Keegan contributed 0%, 40% and 10%, Ivana Osenk contributed 0%, 20%, and 0%, and Tracey Wade contributed 40%, 0%, and 50% to the research design, data collection and analysis, and writing and editing, respectively.

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Abstract

There is a lack of empirical validation for the eating disorder duration criterion in early intervention models in predicting treatment outcomes. The premise that shorter duration leads to better treatment outcomes may be creating artificial entry criteria into early intervention programs that prevent individuals who may benefit from treatment from receiving it. The present study aimed to examine the contribution of duration to treatment outcome for EDs. To do so, we conducted a systematic review using four electronic databases to identify studies that reported on the association between duration and different treatment outcomes. Random effects meta-analyses were conducted for studies where the extraction of effect sizes was possible. Indicators of treatment outcome were heterogeneous, thus a series of different meta-analyses, aiming at increasing homogeneity were conducted. First, we examined the average effect size for one primary ED related outcome across included studies. Second, we conducted three subgroup analyses to explore possible sources of heterogeneity. Third, two stand-alone meta-analyses investigated outcomes related to weight gain and ED psychopathology. None of the meta-analyses conducted revealed an association between duration and treatment outcome. High levels of heterogeneity were present. While results should be interpreted in the context of marked heterogeneity, findings highlight the potential harm of using duration as an entry criterion into treatment programs, as results revealed a lack of validation for this criterion. The present study, therefore, provide a valuable justification for future work in developing early intervention strategies seeking to provide evidence-based treatment as early as possible.

Introduction

The seminal work of the FREED model limited admission to early intervention services to people with an illness duration of less than three years. This was informed by recommendations from a paper applying the staging model used for psychiatric disorders to eating disorders (Treasure, Stein, & Maguire, 2015). The choice of three years was not data driven but speculative: "*There is uncertainty about the time frames attached to these different stages. Until more evidence is available, we propose that the staging definitions adopted in some research protocols in EDs, such as an early phase defined as less than three years duration (with the possibility of reducing this to be less than one year duration to be in line with the definition of an early phase in other psychiatric disorders), will be used to define an early phase of AN"* (Treasure, Stein & Maguire, 2015, p. 176). This decision was informed by work in Family-Based Treatment (FBT), which suggested more favourable results in comparison to individual therapy in younger patients with AN (below the age of 18) with relatively short-term illness (less than three years) at both one (Russell et al., 1987) and five-year (Eisler et al., 1997) follow-up, but not in older patients (above the age of 18) with longer illness duration (above three years; these patients had poor outcome with both therapies). The results of these studies and the definition of early phase in other psychiatric disorders (i.e., psychosis) were taken to support the idea of matching treatment to stage of illness.

There are several problems with adopting this three-year duration criterion. First, this criterion has been borrowed from the field of psychosis where the critical period hypothesis has been defined as a duration of untreated illness (DUI) of three to five years (McGorry et al., 2008). Early intervention services for psychosis have been widely examined and have gained acceptance, focusing on addressing the critical period hypothesis (McGorry, 2015; Correll et al., 2018). Given the rapid progression of illness following first episode psychosis, intervening early, whilst duration of illness is shorter, has important clinical implications for psychosis, as intervention during later stages makes the disorder less responsive to treatment (Birchwood et al., 1998). It is important to note that EDs and psychosis are very different disorders with distinct presentations and treatment approaches. While the critical period hypothesis may be valid for psychosis, it may not necessarily apply to EDs. Rather than embracing the early intervention in psychosis approach, which focuses on reducing the DUI to prevent the development of a chronic and debilitating condition, it is crucial to examine the evidence supporting this criterion within the context of EDs. It is essential to consider whether duration should play a role in influencing treatment decisions, including the consideration of admission to early intervention services.

Second, this duration criterion has only been investigated with respect to treatment of AN in youth and not all other EDs, and these studies lack power to make robust conclusions about people over 18 years given the limited number included in such trials. Third, there is a lack of empirical evidence to support the notion that intervening during the early stages of an ED leads to better treatment outcomes, with previous research reporting mixed findings (Vall & Wade, 2015; Linardon et al., 2017; Gregersten et al., 2019).

Therefore, the present study was intended to provide evidence to inform the development of ED specific early intervention approaches and determine whether ED early intervention models should place an emphasis on duration of illness. The current study focuses on duration of illness, which refers to the total length of time a person has been affected by an illness or health condition, including the period from initial onset to present time. In contrast, DUI refers to the period of time between the onset of symptoms and the initiation of appropriate treatment or intervention. The association between duration of illness and treatment outcomes for both anorexia nervosa and bulimia nervosa were examined, contributing new information to the field, and building upon recent meta-analyses or reviews of predictors of treatment outcome (Vall & Wade, 2015; Linardon et al., 2017; Gregersten et al., 2019). The first of these (Vall & Wade, 2015) reviewed publications related to both anorexia nervosa and bulimia nervosa and included seven studies relating to either duration or age of onset, thus confounding these two variables as well as the two eating disorders. A small but significant effect at end of treatment was determined, r=0.19, 95% confidence interval (CI): 0.10-0.28. The second (Linardon et al., 2017) provided a systematic review but no meta-analytic data related to bulimia nervosa. The third (Gergertsen et al., 2019) only reported two studies examining duration as a predictor of outcome in anorexia nervosa, showing a negligible effect, r=0.15, 95% CI: −0.03, 0.26. The current study provides a narrative summary of those studies from which it was not possible to extract an effect size for a meta-analysis (n=7), as well as a meta-analysis of obtained effect sizes between duration and treatment outcome across 36 outcomes from 24 different studies.

Method

Search Strategy

The present study was conducted and reported in line with the evidence-based guidelines for reporting systematic reviews and meta-analyses (Moher et al., 2009). The primary search strategy involved searching for relevant papers in four electronic databases: PsychInfo, Medline, ProQuest Dissertations & Theses Global and PubMed. The following search terms were searched for in the title or abstract of papers: (anorexia OR Eating Disorder* OR disordered eat* OR binge eat OR bulimia) and (treatment OR therapy OR psychotherapy) and (response OR outcome) and (predictor OR predict). Databases were searched from 2015 onwards to add studies already identified in the Vall and Wade (2015) meta-analysis, using search terms based on that of Linardon et al. (2017) and Gregersten et al. (2019). The final database search was conducted on the 13th of March 2020. The secondary search strategy involved hand searching of all relevant articles identified in the primary electronic search.

Inclusion Criteria

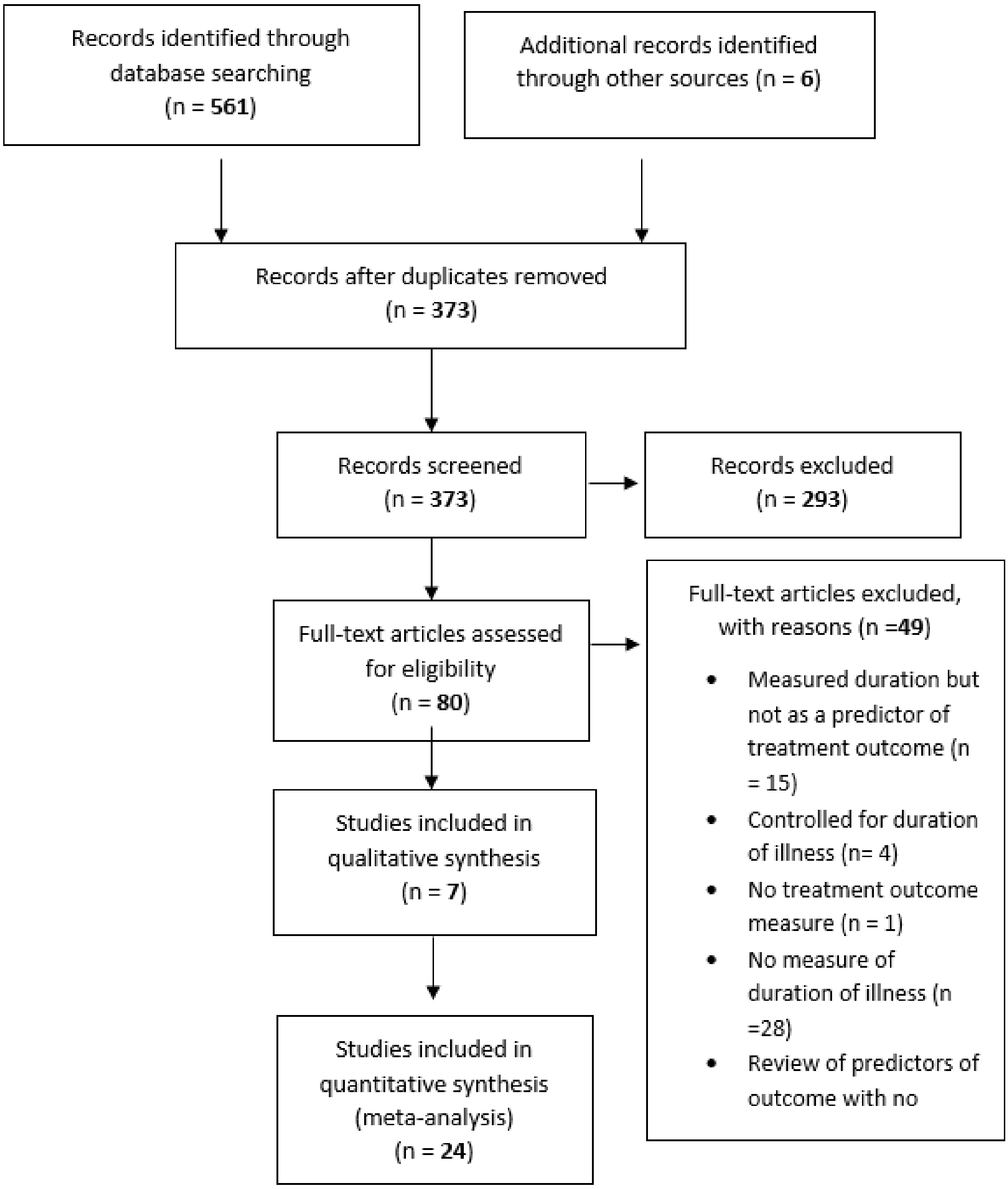
Articles had to meet the following criteria: (1) published in English; (2) eating disorder diagnosis; (3) examine duration as a predictor of treatment outcome.

Study Selection

The search outputs from the four databases were cross referenced and duplicates were removed before examining results. Title and abstracts were assessed by the PhD candidate and one co-author against the inclusion criteria to determine whether they related broadly to the question of interest. The full text of all remaining articles was examined to assess eligibility for inclusion in the meta-analysis, including effect size calculation. Where the paper did not present statistics that could be used in a meta-analysis, the PhD candidate contacted authors of these papers for data. The PhD candidate and co-author discussed any papers where there was uncertainty about inclusion until a consensus was reached. The agreement rate was 85% at title and abstract screening and 92% at full text. **Figure 3.1** presents a flow diagram of the selection process.

Figure 3.1

PRISMA flow diagram



Meta-analyses

Zero-order correlation coefficients, *r*, were obtained for 36 primary outcomes across 24 different publications and 2349 participants. Different treatment groups were combined for the purpose of examining the association between duration and outcome. Given that we expected high heterogeneity due to the variety of studies we included in the meta-analysis, and that different outcomes were reported (ranging from weight change, quality of life, mood, eating disorder behaviours, length of hospital admission, and attainment of some categorical indicator of recovery e.g., no longer meeting diagnostic criteria, body mass index > 17.5, Morgan Russell criteria), we conducted three levels of meta-analysis designed to increasingly reduce heterogeneity. First, we analysed one eating related outcome from each study (n=24). Second, we conducted three sub-group analyses (Cuijpers, 2016), dividing the studies into two or more subgroups. These subgroup analyses were conducted with a mixed effects model in which the effect sizes within the subgroups are pooled with a random effects model and we tested whether the effect sizes between the subgroups differed significantly from each other using a fixed effect model. The first sub-group was diagnostic group (anorexia nervosa or bulimia nervosa). This was considered as the effect of starvation in the former group may enhance the impact of duration on treatment. The second sub-group was the nature of the outcome variable, dichotomous versus continuous. We expected that the former may limit power and result in reduced likelihood of an association between duration and outcome. The third subgroup examined type of outcome by comparing binary outcomes related to indicators of recovery to groupings represented within the continuous variables. Third, we conducted two stand-alone meta-analyses on our largest outcome groups: weight gain (n=8, all studies related to anorexia nervosa) and eating disorder psychopathology (n=5).

The standardization of effect sizes was achieved using Fisher's *r* to *Z* (Borenstein, et al., 2009). As such, all analyses were performed using Fisher's *Z* scale, with correlation coefficients being transformed using an online Practical Meta-Analysis Effect Size Calculator: http://www.campbellcollaboration.org/effect-size-calculato.html. Subsequently, Fisher's *Z* results were back transformed to the appropriate correlation co-efficient and reported to ease interpretation. Cohen's (1992) recommendations were used to interpret small (r = .10), medium (r = .30), and large (r = .50) effects. Random-effects models are considered to allow generality beyond the present set of studies to future studies (Schmid et al., 2009), and were accordingly used to derive effect sizes and 95% CI. Where multiple primary outcome variables were reported, we reported end of treatment outcomes (or the first available assessment after end of treatment if this was not available). The analyses were conducted using Comprehensive Meta-Analysis software (Version 3.3; Borenstein et al., 2005). Forest plots were produced using *r* values and 95% CI for ease of interpretation.

Heterogeneity

Heterogeneity denotes whether the variability in effect sizes across studies is greater than what would be expected due to random error alone (Cuijpers, 2016). Heterogeneity was evaluated using the Q statistic, a measure of weighted squared deviations around the weighted mean effect size, and the I^2 statistic, whereby 25%, 50%, and 75% suggest low, medium, and high levels of heterogeneity, respectively (Higgins and Thompson, 2002).

Publication Bias

Egger's regression intercept was used to assess for publication bias (Moreno et al., 2009). This regression line of study difference over standard error on 1/standard error should theoretically go through the point (zero, zero), the origin and we test whether this is further from zero than we would expect by chance by testing the null hypothesis that the intercept is equal to zero in the population. A significant result indicates that the intercept is not equal to zero and thus publication bias is indicated (Laird et al., 2017).

Quality Assessment

The PhD candidate and co-author assessed the quality of all papers where extraction of *r* was possible, using 12 items from the 22-item Transparent Reporting of a multivariable prediction model for Individual Prognosis Or Diagnosis (TRIPOD Statement; Moons et al., 2015) that were universally relevant across the varied studies, some of which were randomized controlled trials and others which were case series. The selected items included: participant selection process such as specification of key elements of the study setting (item 5a), eligibility criteria (item 5b) and detail of treatment received (item 5c); methodology in relation to definition of outcome in the prediction model (item 6a) and definition of predictors used (item 7a); explanation of how the study size was arrived at (item 8); handling of missing data (item 9); description of how predictors were analysed (item 10a); description of participant flow (item 13a) and characteristics (item 13b); model development – specifying number of participants and outcome events in each analysis (item 14a) and model specification – present the full prediction model (item 15a).

Results

Studies included in the systematic review and meta-analysis

In all, 45 outcomes across 31 studies were identified. Of these, seven studies (nine outcomes) did not allow for the extraction of *r*. These are shown in **Table 3.1**. For anorexia nervosa ($n = 2$ studies), neither showed a statistically significant association between duration and outcome. Two of the four studies examining bulimia nervosa showed longer duration to be a statistically significant predictor of worse outcome (Cooper et al., 2016; Reas et al., 2000). One study with a mixed patient group showed no associations between duration and outcome (Dingemans et al., 2016).

Table 3.1

Illness duration examined as a predictor of treatment outcome: studies where extraction of r was not possible given the statistics provided

Study	Design	Demographics	Sample Size (N)	Treatment	Outcome	Finding
			Anorexia Nervosa/Eating Disorder Not Otherwise Specified			
Fassino et al. 2001	Pre-post, EoT	Age range 17-30 years	40	Inpatient, outpatient "multimodal network therapy"	Morgan Russell outcome	Only higher maturity fears predicted a worse prognosis at 6 months
Tasaka et al., 2017	Pre-Post, 10 years	Female; M^{age} = 13.3 (1.5), range (8.6-15.6 years); ethnicity and SES NR	41	Inpatient	Full/partial remission: DSM-V	Duration did not differ between three groups (full-, partial-, non-remission)
			Bulimia Nervosa/Binge Eating Disorder/Eating Disorder Not Otherwise Specified			
Cooper et al., 1996	Pre-post; EoT	M^{age}=23.8 (5.5); Gender=NR; ethnicity and SES=NR	70	CBT-GSH	≥ 70% reduction in binge/purge	The only predictor of outcome was history of AN – not duration
Cooper et al., 2016	RCT; 60 weeks	Age range 18-65 years; ethnicity and SES NR	130	CBT-E versus IPT	Global EDE-Q	Duration ≥8 years had more severe eating disorder features at 60-week follow up than disorder of shorter duration
Hogdahl et al., 2013	Open trial; EoT	98% Females; M^{age}=27.9 (7.5); M^{age} DPP=8 (4.9); ethnicity and SES=NR	29	CBT-GSH	EDE global; EDI ED symptom and personality index	Duration examined as a predictor, results not reported; only lower BMI and higher self-esteem predicted better outcomes

Reas et al., 2000	Pre-post, 9 years	Females; M^{age} 21.1 (5.6); range 13-40 years; 97.7% Caucasian	44	CBT	Recovered vs non-recovered: MAEDS	Duration was only predictor, OR=1.28, p<.008
				All Eating Disorders		
Dingemans et al., 2016	Pre-post; EoT	96% Female; M^{age}=26.7 (10.6), range=12-65; 95% Dutch; 33% employed, 13% study, 24% disabled, 17% unemployed	1153	CBT; family therapy; psychoeducation, social skills training, art therapy	Global EDE-Q	Duration not reported as predicting any significant outcomes

Notes: EoT=end of treatment; SES=socio-economic status; NR=not reported; MANTRA=Maudsley AN Treatment for Adults; TAU=treatment as usual; CBT=cognitive behavior therapy; CBT-E=CBT enhanced; GSH=guided self-help; IPT=interpersonal psychotherapy; EDE=Eating Disorder Examination; EDE-Q=EDE questionnaire; EDI=eating disorder inventory; ED=eating disorder; OR=odds ratio; MAEDS= Multiaxial Assessment of Eating Disorders Symptoms; LR=logistic regression

The remaining 36 outcomes, across the 24 studies included in the meta-analysis, are shown in **Table 2**; twenty-five were related to anorexia nervosa, with 7 (28%) showing an association between shorter duration and better outcome where the 95% CI did not cross zero; two studies reported the opposite finding. Of the eleven outcomes related to bulimia nervosa, 2 (18%) showed an association between shorter duration and better outcome where the 95% CI did not cross zero; one study showed the association in the opposite direction. The different ways in which durations was assessed over these studies is summarized in **Table 3.2**; 8 (33%) used self-report, 2 (8%) used interview, 7 (29%) used both, and 7 (29%) did not specify the assessment method.

Table 3.2

Illness duration examined as a predictor of treatment outcome at first occasion of assessment after baseline: 24 studies where extraction of r was possible

Study: how duration was assessed	Follow-up	Demographics	n	Treatment	Outcome measures	r (95% ci)
ANOREXIA NERVOSA						
Agras et al., 2014: SR + Int	EoT	89.2% females; M^{age} 15.3 (1.8); 79.1% white; 5.1% Asian; 10.1% Hispanic	158	FBT vs SyFT	Weight gain (SG 1) [1]	.16 (.01:.31)
AMBWANI ET AL., 2020: SR	EoT	96.8% Females; 97.5% White, 1.3% Multi-racial, 1.3% Asian; M^{age}=27.81 (9.30); SES=NR	187	6-week Recovery MANTRA plus TAU vs TAU	Global EDE-Q (SG 2) [2] Negative affect Work/social adjustment	.12 (-.06:.28) -.05 (-.22:.12) .09 (-.08:.26)
CALUGI ET AL., 2013: INT	EoT	Females; M^{age}=25.7 (9.1); race/ethnicity/SES NR	71	Inpatient CBT-E	Weight gain (SG 1) [1]	-.11 (-.33:.13)
CALUGI ET AL., 2015: NR	EoT	Females; M^{age} adolescent group = 15.5 (1.3); Adult patients M^{age} = 24.6(5.2); race/ethnicity/SES NR	61	Inpatient CBT-E	Rate of weight gain (SG 1) [1]	.17 (-.09:.41)
CALUGI ET AL., 2017: INT	EoT	97% females; Age range 18 to 65 years;	56	Inpatient CBT-E	BMI of 18.5 achieved *[1]	.01 (-.25:.27)
CARTWRIGHT ET AL., 2017: NR	EoT	98% females; 18-52 years; race/ethnicity/SES NR	86	MANTRA and SSCM	Sudden weight gain between two treatment sessions *	.06 (-.15:.27)
DOYLE ET AL., 2010: NR	EoT	89.2% females; M^{age} 14.9 (2.1); 75.4% white; 84.6% from intact families	65	FBT	Achieving 95% of IBW at end of treatment *[1]	.32 (.08:.52)
FICHTER ET AL., 2006: SR + INT	12-year follow-up	Female; M^{age}=24.9 (6.7); race/ethnicity/SES NR	84	Inpatient	Morgan Russell outcome *	.35 (.15:.53)
KAPLAN ET AL., 2009: SR + INT	6-month follow-up	Females; M^{age} 23.3 (4.6), range 16-45; race/ethnicity NR; 55% higher SES	93	Inpatient then CBT ± fluoxetine	Weight maintenance *[1]	.16 (-.05:.35)
LE GRANGE ET AL., 2014: NR	EoT	Females; M^{age} 33.4 (9.6), range 20-62; AN ≥ 7 years; 40% FT employment, 75% college degree; race/ethnicity NR	63	CBT vs SSCM	ED QoL (SG 2) Mental Component Scale	.28 (.03:.50) .21 (-.04:.44)

					Beck Depression Inventory	.19 (-.06:.42)
RAYKOS ET AL., 2018: SR	EoT	97% Females; Median age = 22; 76.9% White; race/ethnicity/SES NR	134	CBT-E	Global EDE-Q (SG 2) [2]	-.11 (-.27:.07)
SALBACH-ANDRAE ET AL., 2009: SR + INT	EoT	Females; M^{age} 15.78 (1.31); range 12-18, race/ethnicity/SES NR	57	Inpatient	Recovered, non-recovered *	-.44 (-.63:-.20)
SCHEBENDACH, 2009: NR	EoT	M^{age} = 22 (SD = 3.51) Females, 92% White, SES NR	47	Inpatient treatment, structured behavioral program	Morgan Russell Outcome: Treatment success (full, good or fair outcome) or failure (poor outcome) *	-.36 (-.60:-.06)
STRIK LIEVERS ET AL., 2009: SR	EoT	Females; M^{age} 16.1 (1.6); race/ethnicity/SES NR	268	Inpatient	Length of stay	.13 (.01:.24)
UTZINGER, 2013: NR	EoT	M^{age} = 15.7 (SD= 1.68); 94.6% Female, 73% White, SES NR	56	FBT	Full remission * Partial remission No remission	-.14 (-.38:.13) -.07 (-.33:.20) .01 (-.25:.28)
WADE ET AL., 2009: SR	6-weeks post-baseline	96% female; M^{age} 21.85 (5.37) Age range; 16-37, race/ethnicity/SES NR	47	Inpatient: TAU vs TAU + MI	Change in EDE score (SG 2) [2]	.10 (-.19:.38)
WALES ET AL., 2016: SR	EoT	94% females; Age 18 years and over; positive treatment outcome M^{age}= 27.62 (10.04); M^{age}= 25.50 (7.86); 95% White; 27% unemployed	87	Inpatient Individual psychodynamic therapy + group therapy (CBT, mindfulness, psychoeducation, Pilates)	BMI 17.5 achieved within individual time frame *[1]	-.07 (-.28:.13)
WILD ET AL., 2016: SR	12-month follow-up	Females; M^{age} = 27.4 (7.8); duration ≤ 6 vs > 6 years; race/ethnicity/SES NR	169	CBT-E or focal psychodynamic treatment or TAU	BMI > 17.5 + psychiatric status rating scale ≥ 3) * BMI at 12-months [1]	.25 (.10:.39) .87 (.83:.90)
			BULIMIA NERVOSA			
AGRAS ET AL., 2000:	EoT	Females; M^{age} 25.9 (7.7); Ethnicity: 88% White, 5% African American, 3% Hispanic, 3% Asian; SES NR	194	CBT-BN	Zero binges or purges in last 28 days*	-.01 (-.17:.16)

SR + INT						
CASTRO-FORNIELES ET AL., 2011: SR + INT	EoT	98% female; M^{age} 16.2 (1.1), range 14-18; race/ethnicity/SES NR	40	Outpatient or day hospital	Bulimia: EDI-2 (SG 2) Weekly binges Interoceptive Awareness: EDI-2	.17 (-.15:.46) .36 (.06:.60) .20 (-.12:.48)
FAHY & RUSSELL, 1993: NR	EoT	Females, M^{age} 23.8 (4.7); race/ethnicity/SES NR	39	CBT	≤ 1 binge during last 2 weeks of Tx*	.17 (-.15:.46)
KEEL ET AL., 1999: SR	11.5-year follow-up	Females; M^{age} 35.3 (5.1) 99% White; SES NR	177	CBT ± medication	Remission for 6 months*	.23 (.08:.36)
STEELE ET AL., 2011: SR	EoT	98% females; M^{age} 26 (6.3); race/ethnicity/SES NR	87	CBT-GSH	EDE global (SG 2) [2] Binge Eating Vomiting Overvaluation	-.10 (-.30:.11) .20 (-.01:.39) .20 (-.01:.39) .28 (.07:.46)
TURNBULL ET AL., 1997: SR + INT	EoT	NR	23	CBT	ED psychopathology (SG 2) [2]	-.51 (-.76: -.12)

Notes: AN=anorexia nervosa; BN=bulimia nervosa; EDNOS=eating disorder otherwise not specified; EoT=end of treatment; SES=socio-economic status; NR=not reported; MANTRA=Maudsley AN Treatment for Adults; TAU=treatment as usual; CBT=cognitive behavior therapy; CBT-E=CBT enhanced; GSH=guided self-help; IPT=interpersonal psychotherapy; SyFT=systemic family therapy; EDE=Eating Disorder Examination; EDE-Q=EDE questionnaire; EDI=eating disorder inventory; ED=eating disorder; OR=odds ratio; SG=subgroup used in the final subgroup analysis; SR=self-report; Int=interview; a negative *r* indicates better outcome was associated with longer duration and a positive *r* indicates better outcome was associated with shorter duration; * indicates categorical outcome; [1] indicates studies included in the stand-alone meta-analysis of weight gain; [2] indicates the studies included in the stand-alone meta-analysis of eating disorder psychopathology.

Meta-analyses and associated heterogeneity

In the first meta-analysis across all studies, utilizing the first outcome reported in **Table 3.2**, the Forest Plot (**Figure 3.2**) revealed no association between duration of an eating disorder and treatment outcome, with high heterogeneity, consistent with the observed variability across effect sizes being due to factors extraneous to sampling error (shown in **Table 3.3**). Thus, results should be interpreted cautiously.

In our second group of meta-analyses, reported in **Table 3.3**, neither diagnosis (anorexia nervosa versus bulimia nervosa) nor the nature of outcome (binary versus continuous) moderated the association between duration and outcome. None of the sub-group associations between duration and outcome were significant, and heterogeneity remained medium to high. In the third subgroup analysis, we examined twelve of the thirteen binary outcomes related to indicators of recovery (except for Cartwright et al., [2017], who examined sudden weight gain between two treatment sessions) to two of the largest sub-groups across the continuous outcomes as categorized in **Table 3.2**: eating disorder psychopathology (N=7), weight gain (N=3). No significant moderation was present, and none of the sub-group associations between duration and outcome were significant. Heterogeneity was lower across these analyses, in the low to medium range (**Table 3.3**), with the weight gain category not having significant heterogeneity.

In our third and final meta-analyses, stand-alone examinations of weight gain and eating disorder psychopathology, there were no significant associations between duration and outcome (**Table 3.3**). The direction of the effect size for eating disorder psychopathology was consistent with longer duration being associated with better outcome, consistent with the direction of three of the five included studies. Heterogeneity was high and significant, with relatively greater variation indicated in the weight gain studies.

Figure 3.2

Forest plot of the relationship between duration of eating disorder and treatment outcome using the first listed outcome for each study in Table 3.2.

Study name	Subgroup within study	Outcome	Statistics for each study						
			Fisher's Z	Variance	Lower limit	Upper limit	Z-Value	Standard error	p-Value
Agras et al., 2014	AN	Weight gain	0.160	0.006	0.003	0.317	1.992	0.080	0.046
Ambwani et al., 2020	AN	Global EDE-Q	0.120	0.005	-0.024	0.264	1.628	0.074	0.104
Calugi et al., 2013	AN	Weight gain	-0.110	0.015	-0.348	0.128	-0.907	0.121	0.364
Calugi et al., 2015	AN	Rate of weight gain	0.170	0.017	-0.087	0.427	1.295	0.131	0.195
Calugi et al., 2017	AN	BMI of 18.5 achieved	0.010	0.019	-0.259	0.279	0.073	0.137	0.942
Cartwright et al., 2017	AN	Sudden weight gain between 2 treatment sessions	0.060	0.012	-0.155	0.275	0.547	0.110	0.585
Doyle et al., 2010	AN	Achieving 95% of IBW at end of treatment	0.330	0.016	0.081	0.579	2.598	0.127	0.009
Fichter et al., 2006	AN	Morgan Russell outcome	0.370	0.012	0.152	0.588	3.330	0.111	0.001
Kaplan et al., 2009	AN	Weight maintenance	0.160	0.011	-0.047	0.367	1.518	0.105	0.129
Le Grange et al., 2014	AN	ED QoL	0.290	0.017	0.037	0.543	2.246	0.129	0.025
Raykos et al., 2018	AN	Global EDE-Q	-0.110	0.008	-0.281	0.061	-1.259	0.087	0.208
Salbach-Andrae et al., 2009	AN	Recovered, non-recovered	-0.470	0.019	-0.737	-0.203	-3.454	0.136	0.001
Schebendach, 2009	AN	Morgan Russell outcome	-0.380	0.023	-0.675	-0.085	-2.521	0.151	0.012
Strik Lievers et al., 2009	AN	Length of stay	0.130	0.004	0.010	0.250	2.116	0.061	0.034
Utzinger, 2013	AN	Full remission at EoT	-0.140	0.019	-0.409	0.129	-1.019	0.137	0.308
Wade et al., 2009	AN	Change in EDE score	0.100	0.023	-0.195	0.395	0.663	0.151	0.507
Wales et al., 2016	AN	BMI 17.5 achieved within individual time frame	-0.070	0.012	-0.284	0.144	-0.642	0.109	0.521
Wild et al., 2016	AN	BMI > 17.5 and psychiatric status rating scale > 3) = global outcome	0.260	0.006	0.108	0.412	3.350	0.078	0.001
Agras et al., 2000	BN	Zero binges or purges in last 28 days	-0.010	0.005	-0.152	0.132	-0.138	0.072	0.890
Castro-Fornieles et al., 2011	BN	Bulimia (EDI-2)	0.170	0.027	-0.152	0.492	1.034	0.164	0.301
Fahy & Russell, 1993	BN	< 1 binge during last 2 weeks of Tx	0.170	0.028	-0.157	0.497	1.020	0.167	0.308
Keel et al., 1999	BN	Remission for 6 months	0.230	0.006	0.081	0.379	3.034	0.076	0.002
Steele et al., 2011	BN	Global EDE-Q	-0.100	0.012	-0.314	0.114	-0.917	0.109	0.359
Turnbull et al., 1997	BN	ED psychopathology	-0.560	0.050	-0.998	-0.122	-2.504	0.224	0.012
			0.053	0.002	-0.026	0.131	1.314	0.040	0.189

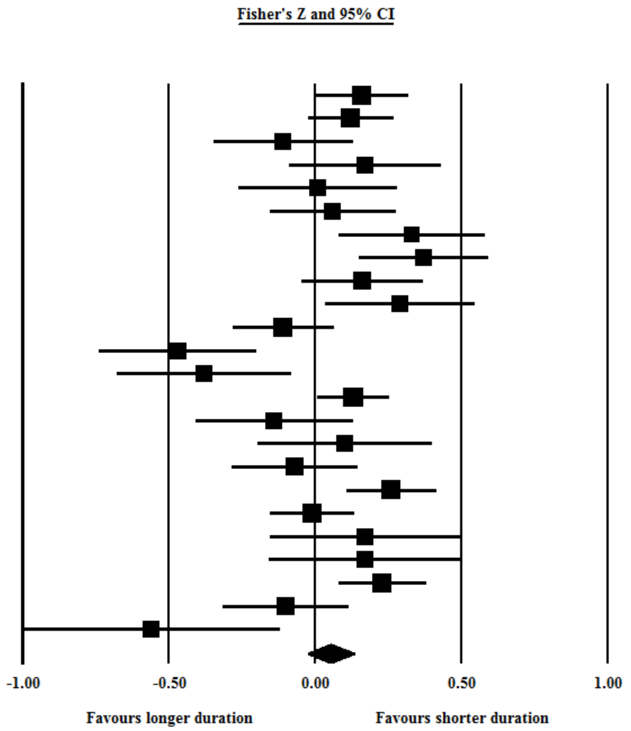


Table 3.3

Results across the meta-analyses

Meta-analysis	N studies	Sub-group (N studies)	*r* (95% CI)	Difference between subgroups: Z (*p*)	Heterogeneity I^2	Heterogeneity *Q*
1. All studies	24	NA	.05 (-.03 to .13)	NA	69.84	76.27, df =23, *p*<.001
2. Subgroups: Diagnosis	24	Anorexia nervosa (18)	.06 (-.03 to .15)	-.39 (.70)	71.30	59.24, df =17, *p*<.001
		Bulimia nervosa (6)	.02 (-.15 to .19)		70.03	16.68, df=5, *p*=.005
2. Subgroups: Nature of outcome	24	Binary (13)	.05 (-.07 to .18)	-.10 (.92)	77.24	52.73, df=12, *p*<.001
		Continuous (11)	.05 (-.04 to .15)		57.22	23.38, df=10, *p*=.009
2. Subgroups: Type of outcome	22	Binary: indication of recovery (12)	.05 (-.09 to .19)	Binary vs eating: -.37 (.71) Binary vs weight: .18 (.86)	79.11	52.66, df=11, *p*<.001
		Eating Psychopathology (7)	.02 (-.14 to .17)		65.59	17.44, df=6, *p*=.008
		Weight gain (3)	.08 (-.09 to .25)		47.89	3.84, df=2, *p*=.15
3. Stand-alone: Weight gain	8	NA	0.23 (-.18 to .64)	NA	96.88	224.18, df=7, *p*<.001
3. Stand-alone: Eating disorder psychopathology	5	NA	-.06 (-.23 to 0.11)	NA	65.71	11.66, df=4, *p*=.02

Notes. NA = not applicable; df = degrees of freedom.

Publication Bias

Publication bias was not indicated by the Egger's regression intercept, -2.06 (95% CI: -4.50-0.38), *p*=.09.

Quality Assessment

For each paper, items were scored 'Y' when reported in line with TRIPOD, 'N' when not reported in line with TRIPOD, and '?' when unclear. The authors had 90% agreement in ratings and conflicts were discussed for each paper until a consensus was reached regarding the scoring of each item. The results from the quality assessment are presented in **Table 3.4**, with a visual summary provided in **Figure 3.3**. Quality was generally low for the following three items, being present in less than 50% of studies: description of participant flow, participant characteristics, and the handling of missing data. The first of these was more likely to occur, but not limited to, older studies, where there was no inclusion of a CONSORT diagram or clear description of participant retention at each step of the recruitment and retention process. Detailed description of participants was absent across 50% of the studies. Only around one in four studies explained how missing data was handled, including any tests of whether data was missing at random, and whether and how imputation was used.

Table 3.4

Results from the TRIPOD quality criteria met for the 24 studies included in the meta-analysis.

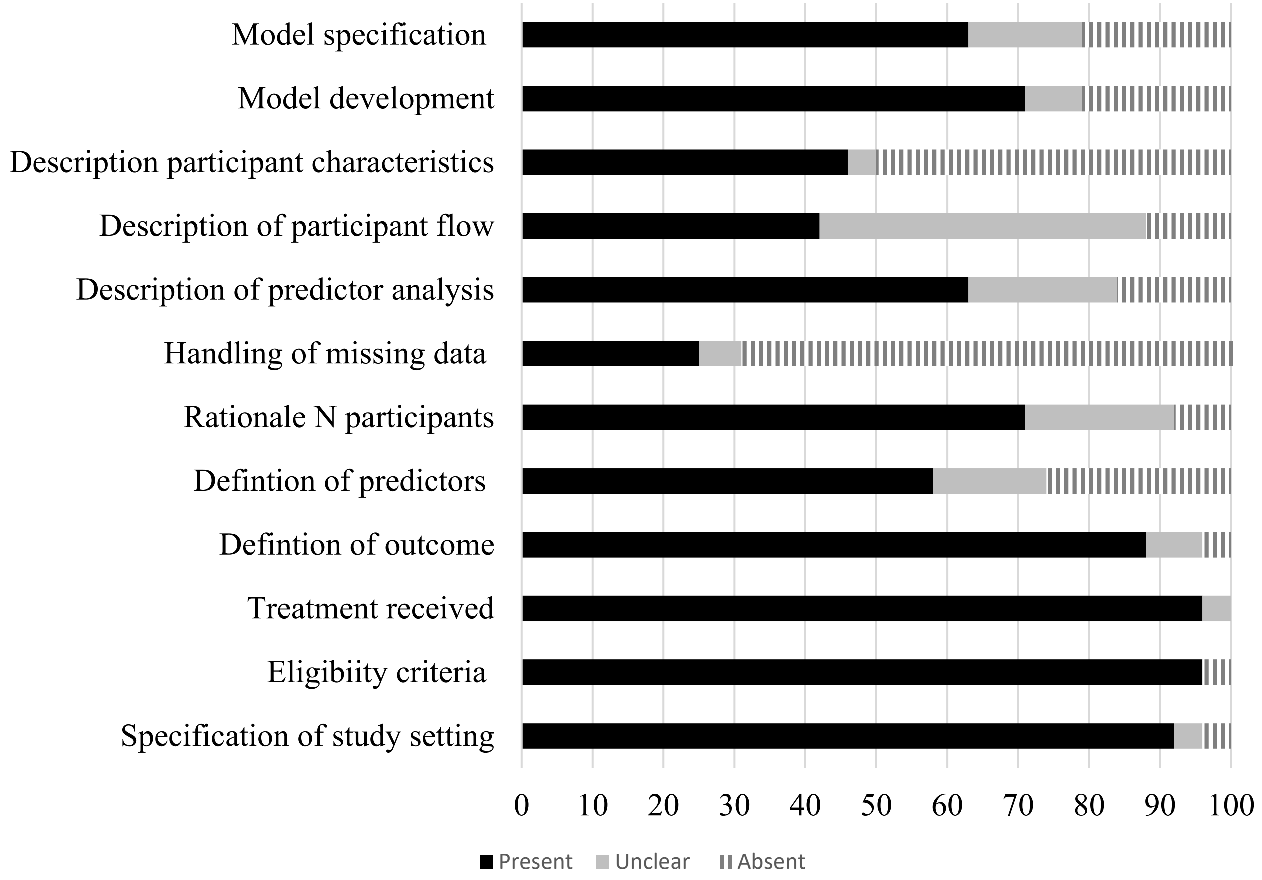
TRIPOD ITEM	*5a*	*5b*	*5c*	*6a*	*7a*	*8*	*9*	*10a*	*13a*	*13b*	*14a*	*15a*
	Specification of study setting	**Eligibility criteria**	**Treatment received**	**Definition of outcome**	**Definition of predictors**	**Rationale for N participants**	**Handling of missing data**	**Description of how predictors were analyzed**	**Description of participant flow**	**Description of participant characteristics**	**Model development**	**Model specification**
Agras et al., 2014	Y	Y	Y	Y	N	Y	Y	N	Y	Y	?	N
Ambwani et al., 2020	Y	Y	Y	Y	N	N	Y	?	?	Y	Y	Y
Calugi et al., 2013	Y	Y	Y	Y	?	Y	N	?	Y	Y	Y	?
Calugi et al., 2015	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Calugi et al., 2017	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cartwright et al., 2017	Y	Y	Y	Y	N	Y	N	N	?	Y	Y	N
Doyle et al., 2010	Y	Y	Y	N	N	Y	N	N	N	?	N	N
Fichter et al., 2006	Y	Y	?	Y	Y	Y	Y	Y	?	Y	Y	Y
Kaplan et al., 2009	Y	Y	Y	Y	Y	N	N	Y	?	?	Y	Y
Le Grange et al., 2014	Y	Y	Y	Y	Y	Y	Y	Y	?	?	N	Y
Raykos et al., 2018	?	Y	Y	Y	Y	?	N	Y	?	?	Y	?
Salbach-Andrae et al., 2009	Y	Y	Y	Y	?	Y	N	Y	Y	Y	Y	Y

Schebendach, 2009	Y	Y	Y	Y	Y	?	N	Y	?	?	Y	Y
Strik Lievers et al., 2009	Y	Y	Y	?	N	Y	N	N	Y	Y	N	Y
Utzinger, 2013	Y	Y	Y	Y	Y	Y	N	Y	N	?	Y	Y
Wade et al., 2009	Y	Y	Y	Y	Y	Y	?	?	Y	Y	Y	Y
Wales et al., 2016	Y	Y	Y	Y	Y	Y	N	Y	?	?	Y	?
Wild et al., 2016	Y	Y	Y	Y	Y	Y	Y	Y	Y	?	Y	Y
Agras et al., 2000	Y	Y	Y	Y	N	?	N	?	Y	?	Y	N
Castro-Fornieles et al., 2011	Y	Y	Y	?	?	Y	N	Y	?	?	N	?
Fahy & Russell, 1993	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Keel et al., 1999	Y	Y	Y	Y	Y	Y	N	?	?	?	?	N
Steele et al., 2011	N	Y	Y	?	?	?	N	Y	?	?	N	Y
Turnbull et al., 1997	Y	N	Y	Y	Y	?	N	Y	N	N	Y	Y

Notes. Y = reported in line with TRIPOD; N = not reported in line with TRIPOD; ? = unclear.

Figure 3.3

Quality assessment for each item as percentages across all studies included in the meta-analysis



Discussion

The aim of the current study was to provide a systematic review and meta-analysis of the association between duration and treatment outcome for eating disorders. Across all the meta-analyses conducted, there was no association between duration and treatment outcome. Overall, our results provide preliminary evidence to suggest that duration does not predict treatment outcomes in anorexia nervosa and bulimia nervosa, thus indicating that early intervention strategies informed by a psychosis model, emphasising duration of illness and a critical period hypothesis, are not a suitable approach for EDs, as shorter duration does not lead to better outcomes.

Duration as a Predictor of Treatment Outcomes

Our meta-analysis includes substantially more studies than previous meta-analyses (Vall & Wade, 2015; Gregertsen et al., 2019), allowing us to perform sub-group analyses with respect to diagnosis, nature (binary or continuous) and type of the outcome variable used (recovery, eating disorder psychopathology, weight gain), as well as two stand-alone meta-analyses (weight-gain and ED psychopathology). The first meta-analysis, including all 24 studies, revealed high levels of heterogeneity. The results of the subsequent subgroup analyses examining the moderating effects of diagnosis, outcome type and type of outcome variable also displayed moderate to high levels of heterogeneity across the subgroups. Thus, despite our attempts to investigate sources of heterogeneity by different subgroup analyses, heterogeneity remained high across all meta-analyses, thus limiting the generalisability of our findings.

Limitations

The findings from the present study should be interpreted cautiously in the context of marked heterogeneity, and the limited power of our subgroup and stand-alone analyses. There are a variety of possible sources of heterogeneity in addition to the ones explored in our subgroup analyses, as well as the issue of disparate outcomes explored in our stand-alone analyses. First, a variation of treatment modalities was used for anorexia nervosa, with some studies examining individual outpatient therapy such as cognitive behaviour therapy for EDs, to other studies examining family-based therapy and others inpatient treatment. On the other hand, treatment for bulimia nervosa primarily consisted of cognitive behavior therapy, with only one study (Castro-Fornieles et al., 2011) including a day hospital treatment group. In addition, different intensity of interventions was used, ranging from outpatient to lengthy inpatient settings. Second, heterogeneity was evident in the participant demographics, including age and possible socioeconomic status, although this was hard to ascertain given detailed characteristics of participants were only provided in half of the studies. Third, there was variation in the time over which outcome was assessed, with some studies assessing outcomes from baseline to end of treatment and others assessing it from baseline to 6- or 12-month follow up. While we tried to introduce some consistency by using the first reported time of evaluation after baseline, this still included a range of 6 weeks (Wade et al., 2009) to 11.5 years (Keel et al., 1999). Finally, there was variable quality of the included studies as assessed by a subset (55%) of the TRIPOD statement items, with older studies being more likely to not provide detailed participant characteristics. Lastly, participants in the included studies were primarily white young adult females, meaning we cannot determine whether our findings generalize to more diverse sample of individuals with EDs.

Conclusions

The present study has important clinical implications for the development of early intervention strategies for EDs but also in the treatment of EDs more broadly. While preliminary, the findings suggest that duration should not inform choice of treatment given the lack of evidence for an influence of duration on treatment outcome, meaning individuals with an ED can fully benefit from receiving evidence-based treatment regardless of the duration of their disorder, whether it be six months or ten years. This finding highlights the potential harm of using duration as an entry criterion into treatment programs, as our findings demonstrated a lack of validation for this criterion, suggesting it may instead be preventing individuals who can benefit from treatment from receiving the help that they need. The present study therefore provides a valuable justification for future work in developing early intervention strategies that seek to provide evidence-based treatment as early as possible.

Chapter 4

Pathways to improve early intervention for eating disorders: Findings from a systematic review and meta-analysis[3]

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[3] The study described in this chapter was published and can be found in **Appendix B**. Marcela Radunz contributed 80%, 75% and 60%, Kathina Ali contributed 0%, 20% and 20%, and Tracey Wade contributed 20%, 5% and 20% to the research design, data collection and analysis, and writing and editing, respectively.

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Abstract

The rates of treatment seeking among those with EDs are considerably low, with only a quarter of individuals seeking help. An effective early intervention strategy may involve understanding and addressing the barriers that prevent individuals with EDs from seeking treatment, so that help-seeking behaviour can be promoted, regardless of the duration of their disorder. Previous research has identified many factors that might be associated with help-seeking in EDs, but to date no review has investigated the quantitative association between these factors and actual help-seeking behaviour. The aim of the current review was to synthesise the relevant quantitative literature on factors (i.e., perceived barriers, characteristics associated with treatment seeking, demographic variables) associated with help-seeking using meta-analytic strategies. Overall, 19 studies were included, identifying 141 perceived barriers (e.g., stigma) or individual characteristics (e.g., BMI, duration of illness) and 56 demographic variables (e.g., ethnicity), which were synthesised into 24 unique variables. Less help-seeking was predicted by higher levels of denial and less perceived ability of others to provide help. Given the small number of studies these results should be considered preliminary. The present study provides preliminary findings to inform the design of early intervention strategies to promote help-seeking behaviour for EDs, highlighting the importance to target denial and the perceived inability of others to provide help, as two significant barriers that individuals with EDs face when seeking treatment.

Introduction

In **Chapter 3**, a meta-analysis of the association between duration and treatment outcomes revealed no significant relationship between these two factors, suggesting duration of illness should not inform the development of early intervention models, but instead greater focus should be placed in providing individuals with EDs evidence-based treatment as early as possible. Given that only one in four individuals with an ED seek help (Hart et al., 2011), with an average length of 5.28 years delay between onset of ED symptoms and help-seeking (Hamilton et al., 2021); a more fruitful approach to early intervention may be gaining a better understanding of what barriers prevent individuals with EDs from accessing treatment, and improving help-seeking behaviour, regardless of the duration of the disordered eating.

There is an emerging body of literature on barriers to help-seeking, which aims to identify what prevents those with EDs from seeking treatment. Informed by this work, specific approaches, and interventions to tackling these barriers can be developed and evaluated. Thus far, three systematic reviews of barriers to help-seeking have been published, including perceived barriers, individual characteristics, and demographic variables (Ali et al., 2017; Innes et al., 2017; Regan et al., 2017). Perceived barriers include external or healthcare system barriers, such as cost of treatment, access to and availability of treatment, and internal or person-related barriers, such as shame and stigma (fear of being judged by others), denial of and failure to perceive the severity of illness, fear of change (ambivalence), and perceived inability to change (self-efficacy; Kantor et al., 2017). Individual characteristics include variables such as body mass index (BMI) and duration of illness, and demographic variables include variables such as sex, gender, and ethnicity (Thompson & Park, 2016).

A variety of limitations of existing studies have been highlighted across the three reviews. The most significant limitation being the paucity of quantitative studies available. Furthermore, many of these studies reported means and standard deviations, or percentage of endorsement, of barriers between a help-seeking and non-help-seeking group, failing to analyse the strength of the relationship between the different barriers and help-seeking behaviour, such as by providing effect sizes. The lack of quantitative synthesis and use of meta-analytic strategies to investigate barriers to help-seeking are significant gaps in the help-seeking literature, which prevents the identification of key barriers that truly impact help-seeking, which can be targeted in early intervention strategies to improve earlier help-seeking across this population. The present study aims to address this gap in the literature by conducting a systematic review of studies that synthesises variables related to the three factors (i.e., perceived barriers, individual characteristics, demographic variables) associated with help-seeking using meta-analytic strategies, with the aim of providing recommendations and suggestions on how the factors identified can be used to improve early intervention for EDs.

Method

Search Strategy

The present study was conducted and reported in line with the evidence-based guidelines for reporting systematic reviews and meta-analyses (Moher, 2009; Page et al., 2021). The databases PsycINFO, PubMed and Medline were searched for eligible studies for all years covered through to 25th May 2022. There were no restrictions placed on the date of publication. The following search terms were used in title and abstract: (1) barrier* OR facilitator* OR predict* OR correlate* OR characteristic* OR factor* (2) eating disorder* OR disordered eat* OR anorexi* OR binge eat* OR bulimia OR body image OR body dissatis* OR weight concern (3) help seek* OR treatment seek* OR seek*. The search terms were adapted from Ali et al. (2017). In addition, the ProQuest Dissertations and Theses Global database was searched for unpublished articles using the search terms above in the title only. The secondary search strategy involved hand searching of all relevant articles identified in the primary electronic search.

Inclusion and Exclusion Criteria

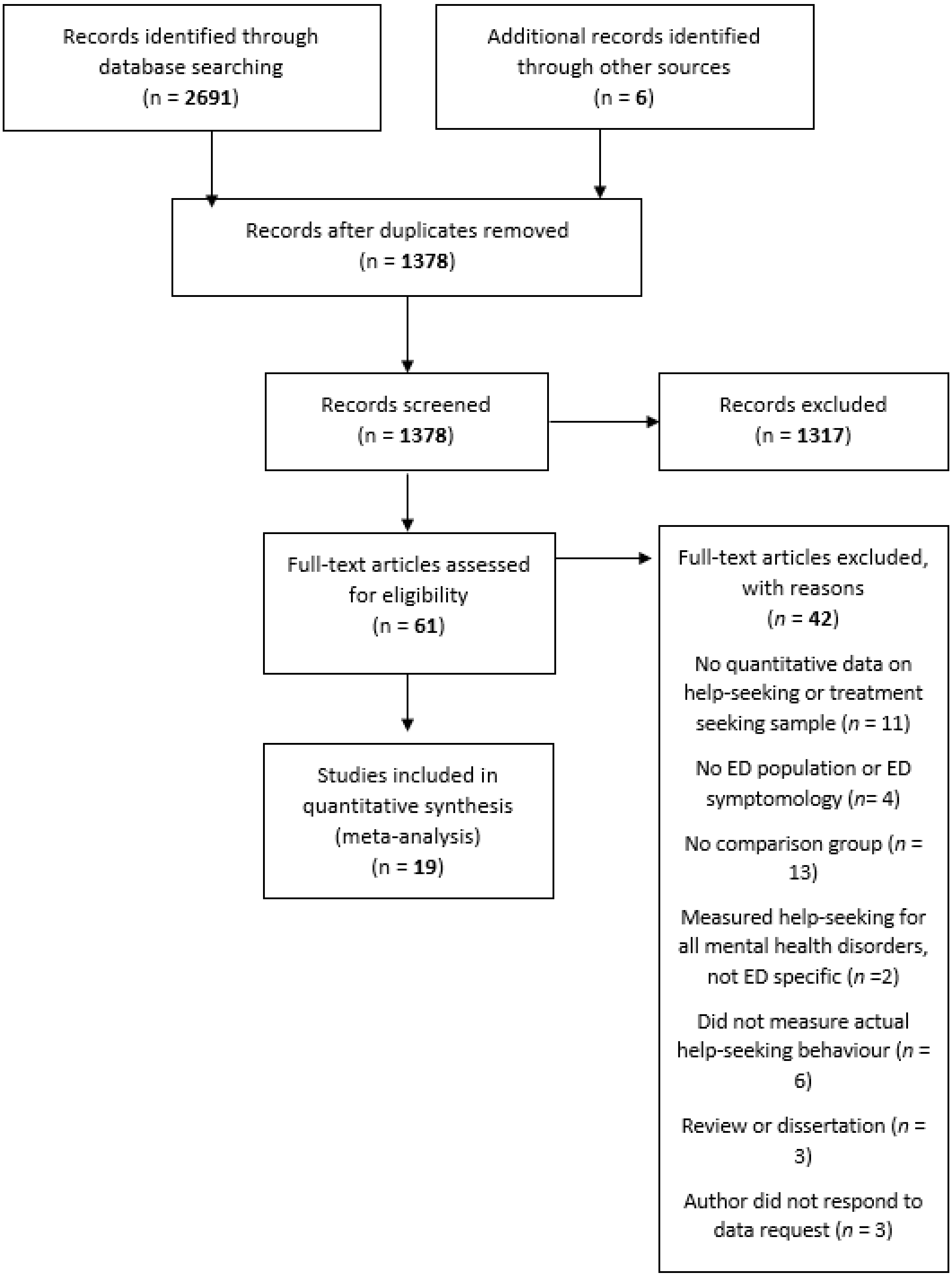
Studies that met the following criteria were included: (1) investigated factors (barriers and/or facilitators) associated with help-seeking for disordered eating; (2) included a population with either a diagnosis of an ED or displaying disordered eating symptomology; (3) included quantitative data on help-seeking (i.e., a measurement of actual help-seeking behaviour or an ED treatment seeking sample was required); (4) included a comparison between two groups (i.e., between help-seekers versus non-help-seekers or in treatment versus not in treatment); (5) contained extractable quantitative data (i.e., variables) that was the same between the two groups; (6) were published in English.

Study Selection

The search outputs from the three databases were cross referenced and duplicates were removed before examining results. Title and abstracts were assessed against the inclusion criteria to determine whether they related broadly to the question of interest. The full text of all remaining articles was examined to assess eligibility for inclusion in the meta-analysis, including effect size calculation. The PhD candidate and a co-author discussed any papers where there was uncertainty about inclusion until a consensus was reached. The agreement rate was 95.5% at title and abstract screening and 78% at full text. The most common reason for disagreement was lack of clarity around a comparison group in studies with treatment seeking populations. **Figure 4.1** presents a flow diagram of the selection process.

Figure 4.1

PRISMA flow diagram



Data Extraction Process

The PhD candidate extracted the information required for the meta-analysis from all eligible papers, and an independent screener (undergraduate student) extracted data from three papers, totalling 48 correlation coefficients on factors associated with help-seeking. The information extracted by the independent screener aligned 100% with the information extracted by the PhD candidate. To calculate effect sizes as correlation coefficients, the sample sizes, means, and standard deviations (or standard errors when standard deviations were not reported) were extracted for the treatment seeking and non-treatment seeking groups. In addition, an odds ratio was calculated and then converted into a correlation coefficient for papers which reported proportions or percentages on each barrier. Demographic information, including age, sex, race, and socio-economic status of participants, was also extracted from each paper. The PhD candidate requested necessary data from 11 corresponding authors from papers that did not report this information, and eight responded. **Table 4.1** presents a summary of all included studies.

Table 4.1

Extracted data from the 19 cross-sectional studies included in the review

Author/Year	Study Design	Participant Characteristics	*N*	Symptom Level at Recruitment/ED Diagnosis	Help-Seeking Behaviour	Factors Identified
Ali et al., 2020 (Australia)	Compared those who had previously sought help versus those who did not	M^{age} = 20.04 (*SD* = 2.02); 76.3% Female; 58.1% Caucasian, 34.4% Asian; 88.3% Student, 5.9% employed full time	291	ED symptomology measured by Weight and Concerns Scale (WCS; Killen et al., 1994; > 57) and EDE-Q/ ED diagnosis: AN symptom = 50%; BN symptoms = 52.2%; BED symptoms = 4.7%; OED symptoms = 22.2%.	Actual Help-Seeking Questionnaire (AHSQ)	Not wishing to be a burden to others: *r* = .08 (-.04., .19) Self-sufficiency: *r* = .08 (-.04., .19); *r* = .34 (.23., .44) Fear of losing control: *r* = -.15 (-.26., -.04); *r* = .09 (-.03., .20); *r* = -.27 (-.37., -.16) Denial/failure to perceive severity of ED: *r* = -.40 (-.49., -.30); *r* = -.05 (-.16., -.06); *r* = -.31 (-.41., -.20) Stigma and Shame: *r* = -.28 (-.38., -.17); *r* = -.18 (-.29., -.06); *r* = -.21 (-.32., -.10); *r* = -.06 (-.17., .05); *r* = -.29 (-.39., -.18); *r* = -.07 (-.18., .05); *r* = .01 (-.11., .12); *r* = .08 (-.04., .19) Practical barriers: *r* = -.01 (-.12., .11); *r* = -.16 (-.27., -.05); *r* = -.12 (-.23., -.01) Use of other resources: *r* = .08 (-.04., .19); *r* = .25 (.14., .35) Inability of others to provide help: *r* = -.21 (-.32., -.10); *r* = -.09 (-.20., .03); *r* = -.15 (-.26., -.04) Negative attitudes towards treatment: *r* = .25 (.14., .35); *r* = .02 (-.10., .13);

						r = -.08 (-.19., .04); *r* = .10 (-.02., .21); *r* = -.03 (.14., .09) Knowledge of help and treatment sources: *r* = -.14 (-.25., -.03); *r* = -.07 (-.18., .05); *r* = -.05 (-.16., .07) Knowledge about eating disorder and information sources: *r* = .14 (.03., .25); *r* = -.03 (-.14., .09); *r* = -.09 (-.20., .03) Lack of encouragement/support from others: *r* = .03 (-.09., .14); *r* = .17 (.06., .28) Comorbidity: -.20 (-.31., -.09) Previous negative experiences: -.22 (-.33., -.11)
Becker, 2003 (USA)	Compared those who followed up on NEDSP recommendation to those who did not	M^{age} = NR; 84% Female; Ethnicity = 92.1% Caucasian, 4.3% African-American, 1.8% Asian, 1.1% Latino; SES = NR	289	Clinically significant eating disorders symptoms/ ED diagnosis = NR	Percentage of Participants who followed up with counsellor to seek evaluation following National Eating Disorder Screening Program (NEDSP)	Ethnicity: *r* = .10 (-.01., .22)
Bridges et al., 2017 (USA)	Compared treatment seeking group (currently in treatment) to non-treatment seeking group	M^{age} = 23.43 (*SD* = 7.34), 100% Female; 80.4% Caucasian; SES = NR	148	Diagnosis or symptoms of AN (score >= 20 on EAT-26)/ ED diagnosis: AN = 100%	Self-report treatment seeking status for AN	Extraversion: *r* = .-02 (-.24., .22) Agreeableness: *r* = .36 (.12., .55) Conscientiousness: *r* = .33 (.09., .53) Neuroticism: *r* = -.15 (-.38., .09) Openness: *r* = -.13 (-.35., .12)
Cachelin et al., 2001 (USA)	Compared those who had sought help in their	M^{age} = 30.5 (*SD* = NR), 100% Female; 36%	61	Met DSM – IV criteria for ED (BED=54.10%;	Asked if participants had ever sought lifetime treatment	Early experiences of overeating (M^{age} = 13 vs 17): *r* = .25 (. <.001., .47)

	lifetime versus those who have not	Hispanic, 20% black, 13% Asian, 31% white; SES = Hollingshead Two-Factor Index (M= 2.6; *SD* =0.6)		BN=27.87%; AN=8.20%; EDNOS=9.84%)	from a doctor, counsellor or other health specialist for an eating or associated weight problem.	Early onset of regular overeating (M^{age} = 16 vs 20): *r* = .25 (. <.001., .47) Age: *r* = 0 (-.24., .24) BMI: *r* = .17 (-.08., .40) SES: *r* = -.29 (-.51., -.05) Months of insurance coverage: *r* = .12 (-.13., .35) Ethnic identity score: *r* = .10 (-.15., .33) Onset age of clinical syndrome: *r* = -.16 (-.39., .09) English as primary language: *r* = .00 (-.25., .25) Bilingual: *r* = -.008 (-.26., .24) Hispanic: *r* = -.003 (-.25., .25) Asian: *r* = .008 (-.24., .26) Black: *r* = .003 (-.25., .25) White: *r* = .005 (-.25., .26) Single: *r* = 0.00 (-.25., .25) Married: *r* = .003 (-.25., .25 Divorced: *r* = 0.00 (-.25., .25) AN Diagnosis: *r* = .01 (-.24., .26) BN Diagnosis: *r* = 0.00 (-.25., .25) BED Diagnosis: *r* = -.003 (-.25., .25) EDNOS Diagnosis: *r* = .008 (-.24., .26)
Cachelin et al., 2006 (USA)	Compared those who had sought help in their	M^{age} = 28.3 (*SD* = NR), 52.41% Mexican American (M^{age}=	145	ED diagnosis measured by SCID-IV-TR and EDE-Q (AN=10.34%; BN=	Asked if participants had ever sought lifetime treatment from a doctor,	Ethnicity: *r* = .18 (.02., .33) Recognition of ED as a problem: *r* = .22 (.05., .37) Wanting help: *r* = .32 (.16., .46)

	lifetime versus those who did not	27.8), 47.59% European American (M^{age} = 28.8); SES= Hollingshead Two-Factor Index (Mexican American (M = 3.3; *SD* = 1.1); European American (M = 2.6, *SD* = 1.0)		36.55%; BED=32.41%; EDNOS=20.69%)	counsellor or other health specialist for an eating or associated weight problem.	SES = *r* = .07 (-.09., .23) Months of insurance coverage: *r* = .22 (.06., .37)
Coffino et al., 2019 (USA)	Comparison between those who reported previous help-seeking versus no previous help-seeking	Demographics = NR	622	Met criteria for lifetime DSM-5 ED (AN = 44.21%; BN = 14.63%; BED = 41.16%)	Asked participants 6 questions about help-seeking behaviour, such as whether they had sought help from therapist, counsellor for overeating or low weight.	Aged 18-29: *r* = .01 Aged 30-44: *r* = -.003 Aged 45-59: *r* = -.003 Aged > 60: *r* = -.006 Non-Hispanic White: *r* = -.003 Non-Hispanic Black: *r* = .04 Hispanic: *r* = .024 Other: *r* = -.003 Less than high school: *r* = .03 High school or GED: *r* = .008 Some college or higher: *r* = -.003 Income <$US 25,000: *r* = .003 Income $US25,000-39,999: *r* = .003 Income $US40,000-69,999: *r* = 0 Income $US>70,000: *r* -.003
Crawford (1997) (USA)	Comparison between treatment seekers versus non-treatment seekers	M^{age} = 23.2 (*SD* = 7.6); 100% = Female; Ethnicity: 93.9% = Caucasian; SES:	33	Score of 88 or higher on the Bulimia Test (BULIT); BN = 100%	Previous treatment was defined as participation in any formal outpatient individual or group	Age: *r* = .14 (-.19., .45) Duration: *r* = .28 (-.05., .56) BMI: *r* = .07 (-.26., .39)

		26.5% = employed full time			therapy with a psychiatrist, psychologist, counsellor, or nutritionist focused primary on their ED, assessed using clinical interview	
Fatt et al., 2020a (Australia)	Compared those who have sought help versus not sought help	M^{age}=15.14 (*SD* =1.4); 75.5% Female, Ethnicity = NR, SES = NR	1002	Met DSM-V criteria for ED/ ED diagnosis = NR	"Have you ever seen a health professional about a body image problem?"	Self-identification with body image problem: *r* = .22 (.16., .28)
Fatt et al., 2020b (Australia)	Compared those who have sought help versus not sought help	M^{age}=15.14, SD =1.4; 75.5% Female; Ethnicity = NR; SES = NR	1002	Met DSM-V criteria for ED/ ED diagnosis: AN = 15.5%; BN = 14%; BED = 18%; Atypical AN = 18.2%; PD = 13.2%; Major ED = 13.3%; OSFED = 9.9%; USFED = 4.5%; Any ED = 10.1%	"Have you ever seen a health professional about a body image problem?"	Gender (female): *r* = .06 (<.001., .13) Sexual orientation (sexual minority): *r* = .09 (.02., .15) Migrant status (emigrant): *r* = .07 (.01., .13) School grade (Grade 11): *r* = .11 (.05., .17) BMI percentile: *r* = .04 (-.02., .10) SES: *r* = .02 (-.05., .08) Psychological distress: *r* = .13 (.06., .19) Physical functioning: *r* -.06 (-.13., .008) Psychological functioning: *r* = -.06 (-.13., -.002) Social functioning: *r* = -.08 (-.15., -.02)
Forrest et al., 2017 (USA)	Comparison between treatment seekers versus	M^{age} = 41.6% aged 15-16, 29.2% aged 13-	281	Adolescence who met criteria for any lifetime ED/ ED	Asked question "did you ever in your life talk to a medical	Gender: *r* = .10 (-.01., .22) Age: *r* = .21 (.09., .32) Race/ethnicity: *r* = .06 (-.06., .18)

	non-treatment seekers	14, 29.2% aged 17-18; 73.6% Female; 48% white, 24.9% Hispanic, 19.6% black, 1% other; SES= Measured by Poverty Index Ratio, (32.75% PIR >= 6.0, 18.5% PIR <1.5)		diagnosis = AN 11.6%; BN = 22.3%; BED = 11.6%	doctor or other professional about problems with your eating or weight?”	Parental education: r = .11 (-.01., .22) Poverty index ratio: r = .07 (-.04., .19)
Frank (2004) (Canada)	Comparison between treatment seekers versus non-treatment seekers	M^{age} = 21.87 (*SD* = 3.83); 100% = Female; Ethnicity: 5.6% African American; 8.3% = East Asian; 63.9% = Caucasian; 7.6% = European; 2.1% = Hispanic; 4.9% South Asian; SES = NR	59	Subthreshold or full syndrome bulimia nervosa according to Eating Disorder Diagnostic Scale (EDDS); BN = 100%	Asked whether they “have sought help from a counsellor or therapist for a personal-emotional or psychological problem”	Age: r = .15 (-.10., .39) African American: r = 0 Caucasian: r = -.003 (-.26., .25) East Asian: r = .06 (-.20., .31) European: r =.-.01 (-.27., .24) Hispanic: r = 0 South Asian: r = -.01 (-.27., .24) Psychological distress: r = .14 (-.11., .38) Perceived Social Support Friends: r = .09 (-.16., .33) Perceived Social Support Family: r = .07 (-.18., .31) Stigma concerns about seeking treatment: r = .25 (-.51., .01) Image concerns about seeking treatment: r = .36 (-.56., .11)
Griffiths et al., 2018 (Australia)	Comparison between diagnosed group	M^{age} = 27 (*SD*=8.21); 90.4% Female; Ethnicity	278	Self-report diagnosis (asked question; “I am currently	Participants asked about their treatment status, diagnosed	Age: r = .08 (-.04., .19) Sexual orientation: r = -.16 (-.27., -.04)

currently in treatment versus diagnosed group currently not in treatment	based on country of residence: 47.5% Australia, 21.4% USA, 12% UK, 8% Canada; SES = NR		diagnosed with an eating disorder"/ ED diagnosis = NR	participants asked, "Are you currently seeking treatment for your eating disorder?" For participants not diagnosed, they were asked "Are you currently seeking treatment for your suspected eating disorder?"	BMI: *r* = -.06 (-.17., .06) Quality of life: *r* = -.09 (-.21., .03) Duration of disorder: *r* = -.03 (-.15., .09) Confidence of having an ED: *r* = -.08 (-.20., .04) Knowledge of EDs: *r* = -.09 (-.21., .03) Cost of Treatment: *r* = -.19 (-.30., -.08) Transport to Treatment: *r* = -.01 (-.13., .11) Inconvenience of attending or completing Tx: *r* = -.16 (-.27., -.04) Finding time to attend Tx: *r* = -.13 (-.25., -.02) Child Care: *r* = -.03 (-.15., .09) Stigma of having ED: *r* = -.03 (-.14., .09) Discrimination: *r* = -.03 (-.14., .08) Having others find out about ED: *r* = -.01 (-.13., .11) Denial: *r* = -.04 (-16., .08) Lack of knowledge about ED: *r* = -.12 (-.23., .01) Not knowing if actually have ED: *r* = 0 (-.12., .12) Not knowing if ED is severe enough for Tx: *r* = -.08 (-.19., .04) Fear of losing control: *r* = .05 (-.06., .17) Fear of change: *r* = .05 (-.07., .16)

						Motivation to change r = .01 (-.11., .12) Fear/doubt about Tx: r = .01 (-.11., .13) Fear/doubt about therapist: r = -.15 (-.27., -.04) Lack of encouragement/support from others: r = -.10 (-.22., .02) Lack of understanding from others: r = -.02 (-.10., .13) Not knowing where to get help: r = -.28 (-.38., -.16) Compromising my self-sufficiency by seeking Tx: r = -.16 (-.27., -.04) Previous negative treatment experience: r = -.13 (-.24., -.01) Not wanting to concern or hurt others: r = -.12 (-.23., -.01) Stigma related to seeking treatment: r = -.02 (-.14., .10) Stigma of seeing a therapist/counsellor: r = -.06 (-.17., .06)
Grillot & Keel, 2018 (USA)	Compared those who had sought treatment for ED from 2002 to 2012 versus those who had not sought treatment during this period	M^{age} = 33.25 (*SD*= 11.85); 83.8% Female; Ethnicity: 64.6% non-Hispanic Caucasian; SES=NR	401	Meeting criteria for a probable DSM-5 ED based on Eating Disorder Diagnostic Scale/ ED diagnosis = NR	Participants asked: “Have you ever sought formal treatment for an eating disorder?”	Gender (female): r = .51 (.43., .58) Race: r = -.003 (-.10., .10) Age: r = .003 (-.10., .10) BMI: r = -.01 (-.09., .11) Substance use: r = .13 (.03., .23) Anxiety: r = .22 (.12., .31) Depression: r = .05 (-.05., .15) Current ED self-recognition: r = .57 (.05., .63)

Linardon et al., 2020 (Australia)	Currently in treatment for ED versus not currently in treatment	M^{age} = 28.59 (*SD* = 8.10); 93% Female; 82.1% White, 8.1% Asian, 4.3% Hispanic; SES = NR	786	Disordered eating symptomology measured by EDE-Q (M = 3.83, *SD* = 1.11)/ ED diagnosis = NR	Participants indicated whether they had ever seen or were currently seeing a mental health professional for disordered eating behaviours and/or thoughts	Motivation to change: *r* = .01 Ambivalence to change: *r* = -.007 Symptom concern: *r* = -.006 Financial cost of treatment: *r* = .08 Geographical constraint: *r* = .001 Confidentiality/privacy concerns: *r* = .06 Stigma associated with help-seeking: *r* = -.03 Stigma associated with judgement from health professionals: *r* = -.05 Not knowing where to seek help from: *r* = .18 BMI: *r* = Age: *r* = .04 Sex: *r* = -.02 Ethnicity: *r* = .05
Lipson et al., 2017 (USA)	Compared enrolees versus non-enrolees in the Healthy Body Image Program	M^{age} = NR; 64.7% female; Ethnicity: 74.86% White, 4.91% African American, 14.77% Latino, 15.28% Asian, 10.14% Other; SES = NR	445	High ED risk measured by Weight and Concerns Scale (WCS; Killen et al., 1994)/ ED diagnosis = NR	Percentage of participants who enrolled in Healthy Body Image program versus participants who did not enrol	I have not had a need for counselling/therapy: *r* = -.18 (-.32., -.05) I prefer to deal with issues on my own: *r* = -.01 (-.15., .13) I'm not sure how serious my needs are: *r* = .18 (.04., .31) I don't have time: *r* = .15 (.01., .29) I get a lot of support from other sources, such as family and friends: *r* = -.07 (-.21., .07) There are financial reasons: *r* = .07 (-.07., .21)

						The problem will get better without counselling/therapy: *r* = -.11 (-.25., .04) I don’t know what resources are available to me: *r* = .09 (-.05., .23) Issues related to eating and body image are normal in college/graduate school: *r* = .13 (-.02., .27) I worry about what others will think of me: *r* = .08 (-.06., .22) I worry that people providing services will judge me: *r* = .01 (-.13., .14) I worry I will be pressured to gain weight: *r* = .14 (-.06., .32)
McLean et al., 2019 (Australia)	Comparison between those already in treatment versus not in treatment	M^{age} = NR; 93.5% Female; Ethnicity = NR; SES = NR	134	Disordered eating behaviours/ ED diagnosis = NR	Treatment seeking intention measured on a 5-point Likert scale (0 = I do not plan to get help; 5 = I am already receiving help)	Motivation to change: *r* =.-.08 (-.22., .07) Confidence to change: *r* = -.12(-.26., .02) Stigma: *r* = .03 (-.12., .18) Ambivalence: *r* = -.07 (-.08., .21) Dietary restraint: *r* = .07 (-.07., .21) Binge eating *r* = -.18 (-.31., -.03) Body change/control behaviours: *r* = -.01 (-.15., .14) Body dissatisfaction: *r* = -.01 (-.14., .15) Eating disorder cognitions: *r* = .02 (-.12., .16) Body image cognitions: *r* = .04 (-.11., .18) Mental health impact: *r* = -.03 (-.18., .11)

						Relationship impact: *r* = .07 (-.07., .21) Well-being impact *r* = .05 (-.09., .20)
Moessner et al., 2016 (Germany)	Comparison of participants who sought professional help or intend to seek help and those who have not sought help or do not intend to	M^{age} =15.7, SD=4.8, female = 72.2%, Ethnicity, SES = NR	453	WCS Score >57 indicated risk of developing ED/ ED diagnosis = NR	Asked; 'In the past 3 months, have you accessed any professional help (e.g., counsellor, psychologist) because of your eating behaviour or dissatisfaction with your body shape/weight?''	Age: *r* = .14 (.04., .24) Gender: *r* = .18 (.08., .28) Patient Health Questionnaire (anxiety and depression): *r* = -.02 (-.011., .08) I think I need professional help: *r* = -.05 (-.15., .05) I think professional help would be beneficial: *r* = .36 (.26., .45) I know whom to approach: *r* = .19 (.09., .28)
Neyland & Bardone-Cone, 2019 (USA)	Comparison between treatment seekers versus non-treatment seekers	M^{age} =20.58, SD=2.12, female =100%, Ethnicity = Latino 100%, Race = 72% white, SES (parent education mean) = 13.55years, SD=3.24	43	Diagnostic history survey followed up by SCID for DSM-IV (DSM-5 criteria applied) (phone interview)/ ED diagnosis = NR	Participants reported whether they had ever seen the following health care professionals for an eating disorder: physician, psychologist/therapist for individual therapy, psychologist/therapist for family or couples therapy, psychologist/therapist for group therapy, nutritionist/dietician, psychiatrist, or	Racial/ethnic identity: *r* = .01 (-.28., .29) Negative impact of mental health care providers: *r* = .26 (-.04., .51) Cost of treatment: *r* = .31 (.02., .55) Accessibility to treatment: *r* = .31 (.01., .55) Stigma related to treatment: *r* = .22 (-.07., .48) Stigma related to ED: *r* = .15 (-.15., .42) Discrimination: *r* = .09 (-.21., .38)

					“other” (specified by the participant).	
Trompeter et al., 2021 (Australia)	Comparison between a clinical treatment seeking sample versus a community non-treatment seeking sample	Demographics for whole sample = NR	1164	Disordered Eating symptoms assessed using the EDE-Q behavioural items (binge eating, purging and driven exercise)/ED Diagnosis = NR	Participants in community sample endorsed never having sought treatment for a body image problem whereas clinical sample was currently part of the TrEAT study	Age: -.34 (-.39., -.28) Gender (female): -.23 (-.37., -.09) SES: -.54 (-.67., -.59) Migrant Status (born overseas): -.11 (-. 25.., .03) BMI (percentile): -.29 (.24., .35)

Notes: M^{age} = mean age; SD = standard deviation; NR = not reported; ED = eating disorder; AN = anorexia nervosa; BN = bulimia nervosa; BED = binge eating disorder; EDNOS = eating disorder not otherwise specified; OED = other eating disorder; USFED = Unspecified feeding or eating disorder; PD = purging disorder; BMI = body mass index; SES = socio-economic-status; EDE-Q = eating disorder examination questionnaire; DSM-V = diagnostic and statistical manual of mental disorders fifth edition; SCID = structured clinical interview for DSM-V disorders. Terminology used to describe race and ethnicity are original terms used by the authors.

Barriers

From the 19 included studies, effect sizes for 141 perceived barriers and individual characteristics associated with help-seeking were extracted (**Table 4.2**). To condense the extracted factors into relevant overarching themes, the PhD candidate used previously identified themes in the literature (Ali et al., 2017, Innes et al., 2017, Regan et al., 2017) to select 19 themes to represent the 141 factors extracted, from which the two co-authors independently grouped each factor into a theme. When the authors did not agree or could not find a theme to represent a factor, a new theme was suggested. In total, 19 perceived barrier and individual characteristics were identified. The inter-rater reliability for these ratings was moderate (Cohen's Kappa = .77). The PhD candidate then identified any conflicts between the two co-authors and they re-rated items with conflicts. Inter-rater reliability for the second ratings was very good (Cohen's Kappa = .95). There were 16 items with unresolved conflicts after the second round of ratings. These items were categorized into a theme by the PhD candidate.

Overall, 56 demographic variables were extracted from the 19 studies included in the review (**Table 4.3**). Similar to the grouping process utilised to condense perceived barriers and individual characteristics into overarching themes, demographic variables were grouped into five final demographic themes created by the PhD candidate in consultation with the senior author. The five themes included age, socio-economic-status (SES), ethnicity, sexual orientation, and sex at birth. It is important to note that one paper (Coffino et al., 2019) categorised the demographic variables presented in their paper, such that age categories were provided (e.g., 18-29; 30-44), as well as income (e.g., < US$ 25,000; US$25,000-39,999). Correlation coefficients were extracted for each of the dichotomised demographic variables, resulting in multiple effect sizes from the same paper per theme. In addition, some papers measured participant gender or biological sex, whereas other studies conflated the two constructs (e.g., labelling variable as “gender” but response options as only female or male). For this reason, gender and sex at birth were combined into a single category labelled as “sex at birth”.

Quality Assessment

The PhD candidate and a co-author assessed the quality of all papers using ten selected items from the 22-item Strengthening The Reporting of Observational Studies in Epidemiology (STROBE) Statement Checklist for Cross-Sectional studies (Vandenbrouckel et al., 2008). The ten selected items were chosen collaboratively among the authors and included: specification of objectives of the study (item 3); presentation of key elements of study design early in the paper (item 4); description of study setting (item 5); eligibility criteria, including sources of participant selection (item 6); definition of outcome and factor variables (item 7); details of method of assessment/measurement (item 9); reporting of each number of participants at each stage of the study (item 13); description of participant characteristics, such as demographic and clinical variables (item 14); description of outcome events or summary data (item 15); and lastly summary of key results with reference to the study objective (item 18).

Table 4.2

Perceived Barrier and individual characteristics associated with help-seeking groupings, including items for each theme and correlation coefficients and lower and upper 95% confidence intervals

Author	Barrier item	r coefficient	Lower 95CI	Upper 95CI
	Not wishing to be a Burden to others			
Ali et al., 2020	I don't want others to worry about my problems	0.08	-0.04	0.19
Griffiths et al., 2018	Not wanting to concern or hurt other people in my life	-0.12	-0.23	-0.01
	Self-sufficiency			
Ali et al., 2020	I can handle my problems on my own	0.34	0.23	0.44
Ali et al., 2020	I think I should solve my own problems	0.08	-0.04	0.19
Griffiths et al., 2018	Compromising my self-sufficiency by seeking treatment	-0.16	-0.27	-0.04
Lipson et al., 2017	I prefer to deal with issues on my own	-0.01	-0.15	0.13
	Ambivalence			
Ali et al., 2020	I am not ready to change my eating behaviour	0.09	-0.03	0.2
Ali et al., 2020	I know my problems are serious, but I don't want to lose them	-0.27	-0.37	-0.16
Ali et al., 2020	I don't want to lose control over my eating or weight (e.g., put on weight)	-0.15	-0.26	-0.04
Griffiths et al., 2018	Fear of losing control	0.05	-0.06	0.17
Griffiths et al., 2018	Fear of change	0.05	-0.07	0.16
Griffiths et al., 2018	Finding motivation to change	0.01	-0.11	0.12
Linardon et al., 2020	How motivated are you to change your disordered eating behaviours and/or thoughts?	0.01	-0.06	0.08
Linardon et al., 2020	I am ambivalent towards changing my eating disorder behaviours and/or thoughts	-0.007	-0.08	0.06
Lipson et al., 2017	I worry I will be pressured to gain weight	0.14	-0.06	0.32

McLean et al., 2019	How motivated are you to change your disordered eating behaviours and/or thoughts?	-0.08	-0.22	0.07
McLean et al., 2019	How confident are you in your ability to change?	-0.12	-0.26	0.02
McLean et al., 2019	If I got help for my eating and body concerns, I would be afraid of losing control	-0.07	-0.08	0.21
	Denial/failure to perceive the severity of the ED			
Ali et al., 2020	I don’t believe I have a problem	0.31	0.2	0.41
Ali et al., 2020	I don’t believe I need help	0.4	0.3	0.49
Ali et al., 2020	I don’t feel that my problems are serious enough to warrant treatment	0.06	-0.06	0.16
Cachelin et al., 2006	Belief in having an eating problem	0.22	0.05	0.37
Cachelin et al., 2006	wanting help for an eating problem	0.32	0.16	0.46
Fatt et al., 2020a	“Do you think you have ever had a problem with body image?”	0.22	0.16	0.28
Griffiths et al., 2018	Denial that I have an eating disorder	-0.04	-0.16	0.08
Griffiths et al., 2018	not knowing if my eating disorder is severe enough to warrant treatment	0.08	-0.19	0.04
Griffiths et al., 2018	Do you believe you have an eating disorder?	0	-0.12	0.12
Grillot & Keel, 2018	Current ED self-recognition	0.57	0.05	0.63
Linardon et al., 2020	I am concerned about the level of disordered eating behaviours and/or thoughts I am currently experiencing	0.006	-0.06	0.08
Lipson et al., 2017	I have not had a need for counselling/therapy	-0.18	-0.32	-0.05
Lipson et al., 2017	I’m not sure how serious my needs are	0.18	0.04	0.31
Lipson et al., 2017	The problem will get better without counselling/therapy	-0.11	-0.25	0.04
Lipson et al., 2017	Issues related to eating and body image are normal in college/graduate school	0.13	-0.02	0.27
Moessner et al., 2016	I think I need professional help	-0.05	-0.15	0.05
	Stigma/shame			
Ali et al., 2020	I believe that eating disorders are not real illnesses	0.08	-0.04	0.19
Ali et al., 2020	Other people believe that eating disorders are not real illnesses	-0.29	-0.39	-0.18

Ali et al., 2020	I am afraid of being labelled (e.g., as crazy, mentally ill, having an ED)	-0.06	-0.17	0.05
Ali et al., 2020	I am embarrassed about my problems	-0.28	-0.38	-0.17
Ali et al., 2020	I don’t want anyone to know about my problems	-0.18	-0.29	-0.06
Ali et al., 2020	I am ashamed of my problems	-0.21	-0.32	-0.1
Ali et al., 2020	I think seeing treatment is a weakness	0.01	-0.11	0.12
Ali et al., 2020	I am afraid of being discriminated against	-0.29	-0.39	-0.18
Frank (2004)	Stigma concerns about seeking treatment	.25	-.51	.01
Frank (2004)	Image concerns about seeking treatment	.36	-.56	.11
Griffiths et al., 2018	The stigma of having an eating disorder	-0.03	-0.14	0.09
Griffiths et al., 2018	discrimination from others due to having an eating disorder	-0.03	-0.14	0.08
Griffiths et al., 2018	others finding out I have an eating disorder	-0.01	-0.13	0.11
Griffiths et al., 2018	The stigma of seeking treatment for a mental disorder	-0.02	-0.14	0.1
Linardon et al., 2020	stigma associated with seeking help for my problem	-0.03	-0.1	0.04
Linardon et al., 2020	I worry that health professionals would judge me if I revealed my eating disorder behaviours and/or thoughts	-0.05	-0.12	0.02
Lipson et al., 2017	I worry about what others will think of me	0.08	-0.06	0.22
Lipson et al., 2017	I worry that people providing services will judge me	0.01	-0.13	0.14
McLean et al., 2019	I worry that health professionals would judge me if I revealed my eating and body concerns	0.03	-0.12	0.18
Neyland & Bardone 2019	How much of a barrier was stigma/shame related to EDs to seeking or receiving treatment for your eating disorder?	0.15	-0.15	0.42
Neyland & Bardone 2019	How much of a barrier was stigma/shame related to mental health treatment to seeking or receiving treatment for your eating disorder?	0.22	-0.07	0.48
	Practical barriers			
Ali et al., 2020	I can’t access treatment because of the costs involved	0.16	-0.27	-0.05
Ali et al., 2020	I don’t have enough time	-0.01	-0.12	0.11
Ali et al., 2020	there are not enough health services available	-0.12	-0.23	-0.01
Griffiths et al., 2018	Cost of treatment	-0.19	-0.3	-0.08

Griffiths et al., 2018	transport to treatment	-0.01	-0.13	0.11
Griffiths et al., 2018	inconvenience of attending or completing treatment	-0.16	-0.27	-0.04
Griffiths et al., 2018	finding time to attend treatment	-0.13	-0.25	-0.02
Griffiths et al., 2018	organising childcare so that I can attend treatment	-0.03	-0.15	0.09
Linardon et al., 2020	Financial cost	0.08	0.01	0.15
Linardon et al., 2020	Geographical constraints	0.001	-0.07	0.07
Lipson et al., 2017	I don’t have time	0.15	0.01	0.29
Lipson et al., 2017	There are financial reasons	0.07	-0.07	0.21
Neyland & Bardone 2019	How much of a barrier was lack of referral for treatment to seeking or receiving treatment for your eating disorder?	0.31	0.02	0.55
Neyland & Bardone 2019	How much of a barrier was cost of services to seeking or receiving treatment for your eating disorder?	0.31	0.01	0.55
	Use of other resources			
Ali et al., 2020	If I need help, I will turn to my friends	0.25	0.14	0.35
Ali et al., 2020	if I need help, I will turn to my family	0.08	-0.04	0.19
	Inability of others to provide help			
Ali et al., 2020	I don’t think others can help me	-0.21	-0.32	-0.1
Ali et al., 2020	I don’t think anybody understands my problems	-0.15	-0.26	0.04
Ali et al., 2020	I don’t think others are able to understand my problems	-0.09	-0.2	0.03
	Negative attitudes towards treatment			
Ali et al., 2020	I don’t think that treatment could help me	0.02	-0.1	0.13
Ali et al., 2020	I am afraid of treatment	0.25	0.14	0.35
Ali et al., 2020	I don’t think health professionals understand my cultural background	0.1	-0.02	0.21
Ali et al., 2020	I don’t think health professionals have sufficient knowledge about my problems	-0.08	-0.19	0.04
Ali et al., 2020	I don’t trust health professionals	-0.03	-0.14	0.09
Griffiths et al., 2018	Fear or doubts about the treatment	0.01	-0.11	0.13
Griffiths et al., 2018	Fear or doubts about the therapist or counsellor	-0.15	-0.27	-0.04

Linardon et al., 2020	Confidentiality/privacy concerns	0.06	-0.01	0.13
Lipson et al., 2017	People providing services aren’t sensitive to cultural diversity	0.06	-0.09	0.2
Moessner et al., 2016	I think professional help would be beneficial	0.36	0.26	0.45
	Knowledge of help and treatment resources			
Ali et al., 2020	I don’t know where to find information about getting help	-0.03	-0.14	0.09
Ali et al., 2020	I don’t know where to seek help	-0.05	-0.16	0.07
Ali et al., 2020	I don’t know about available treatment resources	-0.07	-0.18	0.05
Ali et al., 2020	I don’t know how to ask for help	0.14	-0.25	-0.03
Griffiths et al., 2018	Not knowing where to get help or who to ask for help	-0.28	-0.38	-0.16
Linardon et al., 2020	I wouldn’t know where to seek help from	0.18	0.11	0.25
Lipson et al., 2017	I don’t know what resources are available to me	0.09	-0.05	0.23
Moessner et al., 2016	I know whom to approach	0.19	0.09	0.28
	Knowledge about eating disorder and information sources			
Ali et al., 2020	I don’t know much about the symptoms of eating disorders	0.14	0.03	0.25
Ali et al., 2020	I don’t know where to find information about EDs	-0.09	-0.2	0.03
Griffiths et al., 2018	Lack of knowledge about, or awareness of, eating disorders	-0.12	-0.23	0.01
Griffiths et al., 2018	not knowing if I actually have an eating disorder	0	-0.12	0.12
	Lack of encouragement/support from others			
Ali et al., 2020	my family members are not supportive of me in seeking help	0.03	-0.09	0.14
Ali et al., 2020	my friends are not supportive of me in seeking help	0.17	0.06	0.28
Griffiths et al., 2018	Lack of encouragement or support from others	-0.1	-0.22	0.02
Griffiths et al., 2018	Lack of understanding from others	-0.02	-0.1	0.13
Lipson et al., 2017	I get a lot of support from other sources such as family/friends	-0.07	-0.21	0.07
	Comorbidity			
Ali et al., 2020	I feel too depressed and anxious to look for help	-0.2	-0.31	-0.09
Fatt et al., 2020b	Psychological distress (measured by K10)	0.13	0.06	0.19
Fatt et al., 2020b	Social functioning (measured by Paediatric Quality of Life Scale)	-0.08	-0.15	-0.02

Fatt et al., 2020b	Psychological functioning (measured by Paediatric Quality of Life Scale)	-0.06	-0.13	-0.002
Fatt et al., 2020b	Physical functioning (measured by Paediatric Quality of Life Scale)	-0.06	-0.13	0.008
Frank (2004)	Psychological Distress (measured by Hopkins Symptoms Checklist – 21)	.14	-.11	.38
Grillot & Keel, 2018	Anxiety (assessed using a checklist for “phobias/anxiety disorders”)	0.22	0.12	0.31
Grillot & Keel, 2018	Depression (assessed using a checklist for “phobias/anxiety disorders”)	0.05	-0.05	0.15
Grillot & Keel, 2018	Drug/Alcohol abuse (assessed using a checklist for “phobias/anxiety disorders”)	0.13	0.03	0.23
Moessner et al., 2016	Anxiety and depression (measured by Patient Health Questionnaire)	-0.02	-0.011	0.08
	Previous negative treatment experiences			
Ali et al., 2020	I have had negative experiences using health services	-0.22	-0.33	-0.11
Griffiths et al., 2018	Previous negative experience with treatment	0.13	-0.24	-0.01
	Personality			
Bridges et al., 2016	Extraversion	-0.02	-0.24	0.22
Bridges et al., 2016	Agreeableness	0.36	0.12	0.55
Bridges et al., 2016	Conscientiousness	0.33	0.09	0.53
Bridges et al., 2016	Neuroticism	-0.15	-0.38	0.09
Bridges et al., 2016	Openness	-0.13	-0.35	0.12
	ED symptoms			
McLean et al., 2019	I have been trying to limit the amount of food I eat to influence my weight, shape, or size	0.07	-0.07	0.21
McLean et al., 2019	I have eaten really large amounts of food in one go (what others would think is unusually large)	-0.18	-0.31	-0.03
McLean et al., 2019	Body control/change behaviours including vomiting, use of laxatives and or diuretics, diet pills, exercise	-0.01	-0.15	0.14
McLean et al., 2019	I am dissatisfied with my weight, shape, or size	-0.01	-0.14	0.15
McLean et al., 2019	I feel like food, eating, and or trying to control my eating rules my life	0.02	-0.12	0.16

McLean et al., 2019	My weight, body shape, or size is very important for how I think and feel about myself as a person	0.04	-0.11	0.18
	Impairment caused by ED			
McLean et al., 2019	Have your eating, body image concerns, and behaviours to try and control your weight/shape or size made you feel distressed?	-0.03	-0.18	0.11
McLean et al., 2019	Have your eating, body image concerns, and behaviours to try and control your weight/shape or size caused problems with your relationships with others?	0.07	-0.07	0.21
McLean et al., 2019	Have your eating, body image concerns, and behaviours to try and control your weight/shape or size got in the way of doing things you used to enjoy?	0.05	-0.09	0.2
	Body Mass Index (BMI)			
Cachelin et al., 2001	BMI	.17	-.08	.4
Crawford (1997)	BMI	.07	-.26	.39
Fatt et al., 2020b	BMI percentile	.04	-.02	.10
Griffiths et al., 2018	BMI	-.06	-.17	.06
Grillot & Keel., 2018	BMI	-.01	-.09	.11
Linardon et al., 2020	BMI	-.003	-.07	.07
Trompeter et al., 2021	BMI percentile	-.29	.24	.35
	Duration of ED			
Cachelin et al., 2001	Early experiences of overeating (M age 13 vs 17)	.25	.01	.47
Cachelin et al., 2001	Early onset of regular overeating (M age 16 vs 20)	.25	.01	.47
Cachelin et al., 2001	onset age of clinical syndrome	-.16	-.39	.09
Crawford (1997)	Duration of eating disorder	.28	-.05	.56
Griffiths et al., 2018	Duration of eating disorder	-.03	-.15	.09

Notes. Barrier themes are bolded and italicised. ED = eating disorder; CI = confidence interval

Table 4.3

Demographic characteristics groupings, including items for each demographic variable and correlation coefficients and lower and upper 95% confidence intervals.

Author	Demographic Factor	r coefficient (95% CI)
	Age	
Cachelin et al., 2001	Age	0 (-.24., .24)
Coffino et al., 2019	Aged 18-29	0.01 (-.07., .09)
Coffino et al., 2019	Aged 30-44	-0.003 (-.08., .08)
Coffino et al., 2019	Aged 45-59	-0.003 (-.08., .08)
Coffino et al., 2019	Aged > 60	-0.006 (-.08., .07)
Crawford (1997)	Age	.14 (-.19., .45)
Fatt et al., 2020b	School grade	0.11 (.05., .17)
Forrest et al., 2017	Age	0.21 (.09., .32)
Frank (2004)	Age	.15 (-.10., .39)
Griffiths et al., 2018	Age	0.08 (-.004., .19)
Grillot & Keel., 2018	age	0.003 (-.10., .10)
Linardon et al., 2020	Age	0.04 (-.03., .11)
Moessner et al., 2016	Age	0.14 (.04., .24)
Trompeter et al., 2021	Age	-0.34 (-.39., -.28)
	Socio-Economic Status (SES)	
Cachelin et al., 2001	SES	0.29 (-.51., -.05)
Cachelin et al., 2006	SES	0.07 (-.09., .23)
Coffino et al., 2019	Less than high school	0.03 (-.05., .11)
Coffino et al., 2019	High school or GED	0.008 (-.07., .09)
Coffino et al., 2019	Some college or higher	-0.003 (-.08., .08)
Coffino et al., 2019	income <$US 25,000	0.003 (-.08., .08)
Coffino et al., 2019	Income 25,000-39,999	0.003 (-.08., .08)
Coffino et al., 2019	Income $US 40,000 – 69,999	0 (-.08., .08)

Coffino et al., 2019	Income $US > 70,000	-0.003 (-.08., .08)
Fatt et al., 2020b	SES	0.02 (-.05., .08)
Forrest et al., 2017	parental education	0.11 (-.01., .22)
Trompeter et al., 2021	SES	-.54 (-.67., -.59)
	Ethnicity	
Becker et al., 2003	Ethnicity (ethnic minority less likely to seek help)	0.10 (-.01., .22)
Cachelin et al., 2001	ethnic identity score (Treatment seekers less likely to have stronger ethnic identity score)	0.10 (-.15., .33)
Cachelin et al., 2001	Hispanic (More likely to seek help)	-0.003 (-.25., .25)
Cachelin et al., 2001	Asian (More likely to seek help)	0.008 (-.24., .26)
Cachelin et al., 2001	Black (Less likely to seek help)	0.003 (-.25., .25)
Cachelin et al., 2001	White (More likely to seek help)	0.005 (-.25., .26)
Cachelin et al., 2006	Ethnicity	0.18 (.02., .33)
Coffino et al., 2019	Non-Hispanic white (More likely to seek help)	-0.003 (-.08., .08)
Coffino et al., 2019	Non-Hispanic black (less likely to seek help)	0.04 (-.04., .12)
Coffino et al., 2019	Hispanic (Less likely to seek help)	0.024 (-.05., .10)
Forrest et al., 2017	Race/ethnicity (no differences)	0.06 (-.06., .18)
Frank (2004)	African American	0 (-.08., .08)
Frank (2004)	Caucasian	-.01 (-.26., .25)
Frank (2004)	East Asian	.06 (-.20., .31)
Frank (2004)	European	-.01 (-.27., .24)
Frank (2004)	Hispanic	0 (-.08., .08)
Frank (2004)	South Asian	-.01 (-.27., .24)
Grillot & Keel., 2018	Race/ethnicity (Ethnicity not associated as a predictor of treatment seeking)	-0.003 (-.10., .10)
Linardon et al., 2020	Ethnicity (Ethnicity score correlated with treatment seeking measure)	0.05 (-.02., .12)

Neyland & Bardone-Cone, 2019	Race/ethnicity (ethnic minority sample)	0.01 (-.28., .29)
	Sexual orientation	
Fatt et al., 2020b	Sexual orientation (heterosexual or other)	0.09 (.02., .15)
Griffiths et al., 2018	Sexual orientation (heterosexual or other)	-0.16 (-.27., -.04)
	Sex at birth	
Fatt et al., 2020b	Biological Sex	0.06 (.01., .13)
Forrest et al., 2017	Biological Sex	0.1 (-.01., .22)
Grillot & Keel., 2018	gender (female or other)	0.51 (.43., .58)
Linardon et al., 2020	Sex	-0.02 (-.09., .05)
Moessner et al., 2016	Gender (% female)	0.18 (.08., .28)
Trompeter et al., 2021	Gender (% female)	-0.23 (-.37., -.09)

Statistical Analyses

Calculation of Effect Sizes

Correlation coefficients and 95% confidence intervals (CI) were calculated for the included studies using the online Campbell Collaboration tool (https://campbellcollaboration.org/research-resources/effect-sizecalculator.html), inputting sample sizes, means and standard deviations or standard errors for the two groups being compared (treatment seekers versus non-treatment seekers). For studies which included percentages or odds ratios, an online effect size converter tool (https://www.escal.site/) was utilised to obtain the relevant correlation coefficients. Effect sizes were calculated such that a negative sign indicates less help-seeking, and a positive sign indicates more help-seeking.

Meta-analyses

To obtain an overarching effect size for each of the identified 19 perceived barriers and individual characteristics and each of the five demographic variables, a meta-analytic strategy was employed. Given that more than one effect was reported from a single sample (e.g., papers with multiple barrier and demographic outcomes), multi-level random effects meta-analyses were conducted to account for non-independence in effect sizes. These analyses were conducted using R, a free software environment for statistical analyses (R Core Team, 2020), using the approach outlined by Harrer and colleagues (2021). The metafor package (Viechtbauer, 2010) was used to run the multi-level models and produce forest plots.

Heterogeneity

Heterogeneity denotes whether the variability in effect sizes across studies is greater than what would be expected due to random error alone (Cuijpers, 2016). Heterogeneity was assessed using both the Q and I^2 statistics, which were obtained using the metafor package (Viechtbauer, 2010) and dmetar package (Harrer et al., 2019), respectively. The Q statistic is a measure of weighted squared deviation around the weighted mean effect size, with a significant result suggesting that variability is unlikely to be due to chance (Laird et al., 2017). The I^2 statistic is a measure of the proportion of total study variation that is due to heterogeneity. A value of 0 indicates no variance between study estimates is due to heterogeneity, values of 30 or less indicate mild heterogeneity, whereas values above 50 are indicative of notable heterogeneity (Higgins & Thompson, 2002).

Publication bias

The Egger's regression intercept was used to test for evidence of publication bias (Egger et al., 1997), whereby standardised effect sizes are regressed against their precisions and a regression intercept of zero is expected if there is no publication bias, with a significant result suggesting presence of publication bias. We followed advice from Viechtbauer (2015) on extending Egger's test to multilevel meta-analyses by including sample variance as a moderator. A significant moderation suggests publication bias may be present. This method has been used in other multilevel meta-analyses (de Jong et al., 2021; de Valle et al., 2021, Habeck and Schultz, 2015).

Results

Quality Assessment

For each paper, STROBE items were scored as “Y” when they were in line with the criteria, “N” when not in line with the criteria, “P” when partially in line with the criteria, and “?” when unclear. The authors had 95% agreement in ratings and conflicts were discussed until a consensus was reached regarding the scoring of each item. The overall quality of the studies was good, with most being in line with the selected STROBE items. **Table 4.4** presents results from the quality assessment. Two studies (Becker et al., 2003; Coffino et al., 2019) had poorer overall quality, failing to meet criteria for three or more items, with all other studies meeting all STROBE criteria. The item with the lowest quality rating was eligibility criteria, whereby two of the 19 included studies only partially met criteria, failing to provide explanations for the sources and methods of selection of participants. Both unpublished studies included in the review (Crawford, 1997; Frank, 2004) were of good quality based on the selected STROBE items.

Table *4.4*

Results from the STROBE quality criteria met for the 20 studies included in the quantitative synthesis

STROBE ITEM	***3***	***4***	***5***	***6a***	***7***	***8***	***13***	***14***	***15***	***18***
	Specification of objectives, including hypotheses	**Presents key elements of study design**	**Specification of study setting**	**Eligibility criteria**	**Definition of predictors, includes diagnostic**	**Specifies method of assessment**	**Reports number of individuals at each stage**	**Description of participants**	**Reports number of outcome events or summary**	**Summarises key results with reference to study objectives**
STROBE Statement Item										
Ali et al., 2020	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Becker, 2003	Y	Y	P	P	?	P	P	Y	Y	Y
Bridges et al., 2016	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cachelin et al., 2001	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cachelin et al., 2006	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coffino et al., 2019	P	Y	Y	P	Y	Y	Y	P	Y	Y
Crawford (1997)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fatt et al.,2020a	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fatt et al., 2020b	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Forrest et al., 2017	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Frank (2004)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Griffiths et al., 2018	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Grillot & Keel, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Linardon et al., 2020	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lipson et al., 2017	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
McLean et al., 2019	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Moessner et al., 2016	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Neyland & Bardone-Cone, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Trompeter et al., 2021	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Notes. Y = Yes; N= No; P= Partial; ? = Unclear

Meta-Analyses of perceived barriers and individual characteristics

Table 4.5 presents the 19 perceived barrier and individual characteristics themes, including results from the multi-level meta-analyses. Out of the 19 themes, only two perceived barriers were found to significantly predict help-seeking behaviour, with small effect sizes, namely “denial/failure to perceive severity of ED” and “perceived inability of others to provide help”. Higher levels of denial and perceived inability of others to provide help were associated with less help-seeking behaviour. In the denial meta-analysis, a total of 16 denial effect sizes were extracted from eight different papers, thus mild levels of within study heterogeneity were expected ($I^2 = 40.11$). However, most of the heterogeneity was attributed to between study variances ($I^2 = 55.02$), which can be explained by the various methods used by authors to assess this construct. On the other hand, “perceived inability of others to provide help” comprised of three effect sizes, whereby all were derived from the same paper (Ali et al., 2020), thus no between study heterogeneity was expected, and only very mild levels of within study variance were found ($I^2 = 2.78$). See **Figures 4.2 and 4.3** for respective forest plots.

Table 4.5

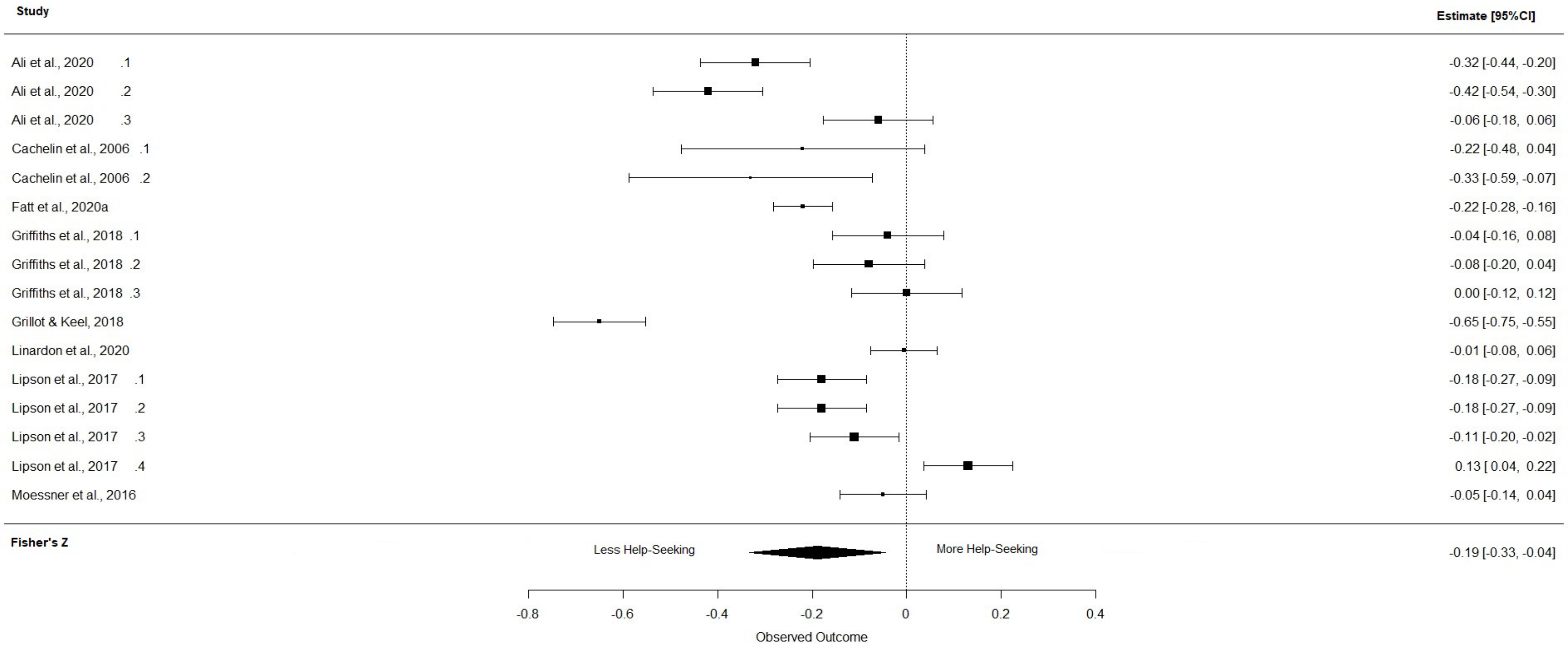
Results from Multilevel Meta-Analyses across the 19 final perceived barrier and individual characteristic themes

Perceived barrier/Individual Characteristic	***k***	**R coefficient (95% CI)**	**SE**	***p***	**I^2 within study**	**I^2 between study**	**Cochran's *Q***
Not wishing to be a burden to others	2	-.02 (-.1.29., 1.29)	.10	.88	41.13	41.13	5.64, *p* = .02
Self-sufficiency	4	.04 (-.33., .41)	.12	.74	58.46	34.86	39.71, *p* <.001
Ambivalence	12	-.02 (-.11., .07)	.04	.65	57.76	20.25	44.20, *p* < .001
Denial/failure to perceive severity of ED	**16**	**-.19 (-.33., -.05)**	**.07**	**.01**	**40.49**	**53.40**	**205.41, *p* < .001**
Stigma/shame	21	.02 (-.09., .14)	.06	.70	31.72	55.04	99.78, *p* <.001
Practical barriers	14	.05 (-.08., .17)	.06	.42	24.40	60.59	58.12, *p* < .001
Use of other resources*	2	.17 (-.97., 1.31)	.09	.31	78.40	0	4.63, *p* = .03
Perceived inability of others to provide help*	**3**	**-.15 (-.30., -.01)**	**.04**	**.04**	**2.78**	**0**	**2.06, *p* = .36**
Negative attitudes towards treatment	10	.08 (-.07., .23)	.07	.26	53.90	36.13	78.59, *p* < .001
Knowledge about help and treatment resources	8	.04 (-.16., .23)	.08	.69	17.52	75.17	65.60, *p* < .001
Knowledge about EDs and information resources	4	-.02 (-.20., .17)	.06	.79	74.04	0	11.59, *p* = .01
Lack of encouragement/support from others	7	.01 (-.11., .12)	.05	.89	18.86	42.13	14.26, *p* = .03
Comorbidity	10	.01 (-.12., .13)	.06	.89	42.09	48.41	70.16, *p* <.001
Previous negative treatment experiences	2	-.18 (-.75., .40)	.05	.16	6.17	6.17	1.14, *p* = .29
Personality factors*	5	.09 (-.24., .40)	.12	.51	89.57	0	38.34, *p* < .001
ED symptoms*	6	-.02 (-.11., .08)	.04	.76	1.77	0	5.09, *p* = .04
Impairment caused by ED*	3	.03 (-.19., .25)	.05	.61	0	0	0.74, *p* = .69
Body Mass Index	7	-.04 (-.31., .23)	.11	.72	0	94.78	79.08 *p* <.001
Duration of Eating Disorder	5	.11 (-.16., .39)	.10	.31	52.51	14.09	11.04, *p* = .03

Notes. K = Number of effect sizes for given barrier theme; CI = confidence interval; R = correlation coefficient; SE = Correlation coefficient standard error, ED = eating disorder(s). * = denotes barrier themes where all effect sizes derived from the same study; bolded barrier themes represent significant factors.

Figure 4.2

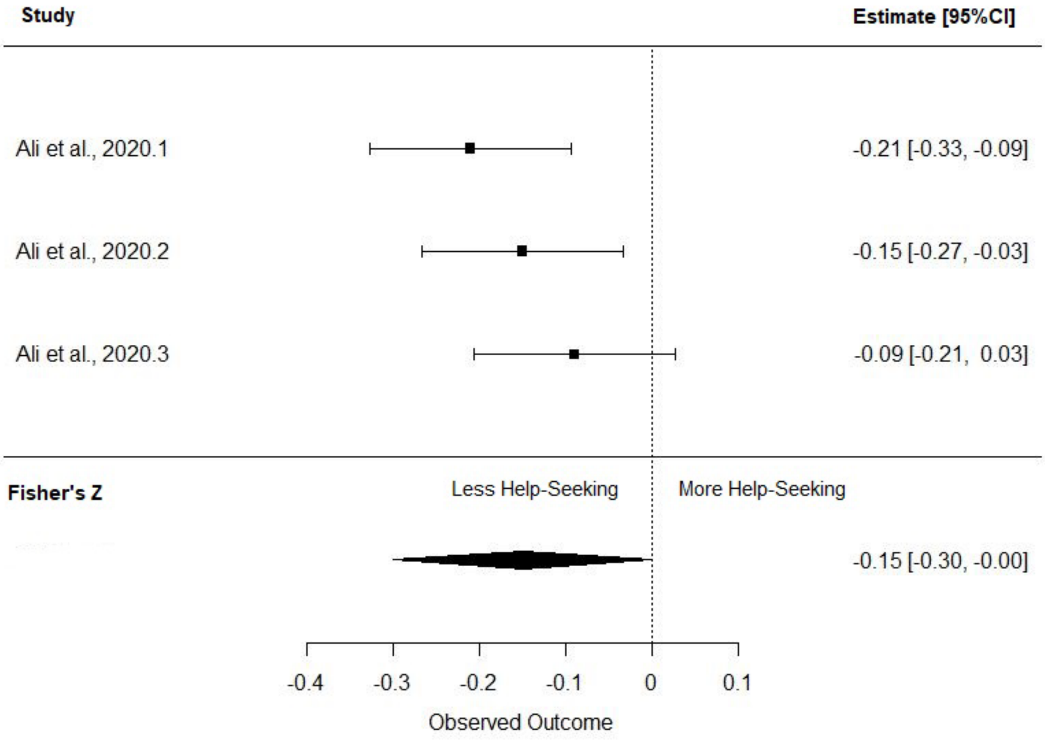
Forest plot of meta-analysis of effect sizes identified for the denial/failure to perceive severity of ED perceived barrier theme



Note. Some samples contributed more than one effect size; these are indicated where numbers follow the study name.

Figure 4.3

Forest plot of meta-analysis of the three effect sizes identified for inability of others to provide help with all effect sizes deriving from the same sample.



Meta-Analyses of demographic variables

Five meta-analyses were conducted to identify which demographic variables associated with help-seeking significantly predicted help-seeking. Our results revealed no significant demographic variables associated with help-seeking (**Table 4.6**).

Publication bias

From the 24 meta-analyses conducted, publication bias was indicated by Egger's regression intercept for one perceived barrier theme, "knowledge of help and treatment resources" (Q = 5.31, *p* = .02) and for one demographic characteristic, SES (Q = 25.78, *p* <*.001*). Results are presented in **Table 4.7.**

Table 4.6

Results from the five demographic characteristics meta-analyses conducted

Demographic variables	***k***	**R coefficient (95% CI)**	**SE**	***p***	**I^2 within study**	**I^2 between study**	**Cochran’*s Q***
Age	14	.04 (-.07., .15)	.05	.48	0	91.67	173.52, *p* <.001
SES	13	-.01 (-.13., .11)	.06	.88	95.17	0	370.60, *p* <.001
Ethnicity	20	.01 (-.02., .04)	.01	.67	0	3.98	12.56, *p* = .86
Sexual orientation	2	-.03 (-1.63., 1.56)	.13	.85	46.36	46.36	13.74, *p* <.001
Sex at birth	6	.07 (-26., .41)	.13	.59	77.43	20.46	201.88, *p* <.001

Note. K = Number of effect sizes for given barrier theme; R = correlation coefficient; CI = confidence interval; SE = Correlation Coefficient standard error, bolded demographics represent significant factors.

Table 4.7

Egger’s test publication bias results for our 24 multilevel meta-analyses, with sample variance as a moderator.

Barrier/demographic description	**Publication Bias Results (Q, *p*)**
Not wishing to be a burden to others	N/A
Self-sufficiency	Q = .01, *p* = .91
ambivalence	Q = 1.08, *p* = .30
Denial/failure to perceive severity of the disorder	Q = .21, *p* = .65
Stigma/shame	Q = 2.20, *p* = .14
Practical barriers	Q = 3.27, *p* = .07
Use of other resources	N/A
Inability of others to provide help	N/A
Negative attitudes towards treatment	Q = .85, *p* = .36

Knowledge of help and treatment resources	**Q = 5.31, *p* = .02**
Knowledge about eating disorder info sources	N/A
Lack of encouragement/support from others	Q = 0.28, *p* = .60
Comorbidity	Q = .27, *p* = .61
Previous negative experiences	N/A
Personality	N/A
ED symptoms	N/A
Impairment caused by ED	N/A
BMI	Q = .36, *p* = .55
Duration of ED	Q = .35, *p* = .56
Age	Q = .05, *p* = .82
SES	**Q = 25.78, *p* = <.001**
Ethnicity	Q = 1.32, *p* = .25
Sexual orientation	N/A
Sex at birth	Q = 1.69, *p* = .19

Notes. Significant results are bolded. N/A = error message due to effect sizes deriving from the same paper.

Discussion

The present study examined perceived barriers, individual characteristics and demographic variables associated with help-seeking for an ED by quantitatively synthesising the factors identified using meta-analytic strategies. Overall, 19 studies were included in the review, identifying 141 perceived barriers and individual characteristics and 56 demographic variables. These were synthesised into 19 perceived barrier and individual characteristics themes and five demographic themes. Only two of these 24 themes emerged as significant correlates of help-seeking. No demographic variables were significant correlates, with age having inconsistent findings across the literature, whereby some studies found younger age to be associated with more treatment seeking, whereas others found older age to be associated with more treatment seeking. The two significant themes included two perceived barriers, namely “denial/failure to perceive the severity of ED” and “perceived inability of others to provide help”. Less help-seeking was associated with higher levels of denial and higher perceived inability of others to provide help.

Denial/failure to perceive the severity of the disorder

Denial emerged as the strongest barrier to help-seeking (*r* = -.19, CI: -.33., -.05), encompassing items ranging from an inability to perceive the severity of the illness (e.g., “I don’t believe I have a problem”), to an inability to perceive the need for help and support (e.g., “The problem will get better without therapy”). The three systematic reviews on barriers to help-seeking (Ali et al., 2017; Innes et al., 2017; Regan et al., 2017) also identified denial or the failure to perceive the severity of the ED as a key barrier to treatment seeking. Recognition of disordered eating as a problem and not a virtue has been suggested to represent the first step in the ED help-seeking process (Hepworth & Paxton, 2007). Thus, highlighting the importance of identifying strategies to target this variable, so that individuals with EDs engage in the first step of the help-seeking process.

Perceived inability of others to provide help

The second significant perceived barrier associated with help-seeking was comprised of three items measuring the perceived inability of others to provide help (e.g., “I don’t think others can help me”), and the perceived inability of others and anybody to understand one’s problems (e.g., “I don’t think anybody understands my problems”). Thus, this theme touches upon the feeling of “being alone” in one’s experiences, whereby others are perceived to lack understanding and in turn are perceived to be unable to provide help. However, it is important to note that this perceived barrier theme has not been extensively examined, with all effect sizes in the present study deriving from the same sample (Ali et al., 2020).

Duration of eating disorder

Overall, five studies examined duration of eating disorder and their association with help-seeking. Findings from the present study revealed duration of ED to not be a significant barrier to treatment seeking. Thus, combined with findings from **Chapter 3**, which revealed duration does not impact on treatment outcomes, our findings highlight that duration should not be emphasised in the development of early intervention strategies, as it is not a factor impeding help-seeking nor treatment outcomes.

What about stigma?

Interestingly, whilst stigma is the most measured barrier in the literature, it did not emerge as a significant correlate of help-seeking. Overall, 19 effect sizes were extracted from six different studies. Our results contradict recent findings by Hamilton and colleagues (2021), who identified stigma as the most salient barrier to help-seeking in their clinical sample. However, in their study, perceived barriers to treatment seeking were measured using one 7-item scale, measuring only seven different barriers with a single item (cost, stigma, accessibility, social/work concerns, lack of ED knowledge in their general practitioner, personal lack of ED knowledge and other), whereas other studies have used more comprehensive measures including 20 to 40 items on barriers to treatment seeking, including more than two items to assess a single barrier (Griffiths et al., 2018; Ali et al., 2020; Lipson et al., 2017). Thus, it is not surprising that stigma may have emerged as a salient barrier when very few barriers were measured in the first place.

Limitations of this review

The main limitation of the present study is the small pool of quantitative studies available for review and analysis, as well as the very few effect sizes available across the 24 themes identified in this review. This limits the generalisability of findings for "perceived inability of others to provide help", as the three items measuring this theme were extracted from the same paper, thus the same sample. Therefore, we cannot assume that this may be a significant perceived barrier to help-seeking across other populations. In addition, as very few effect sizes were available across the perceived barriers, individual characteristics, and demographic variables identified, we were unable to conduct subgroup analyses, such as examining the impact of different barriers to help-seeking across ED diagnoses. Furthermore, most studies examining perceived barriers and individual characteristics associated with help-seeking created their own measures to assess barriers, without any justification for their choice of items, and in turn authors failed to report on the psychometric properties of these measures.

Conclusions

The present study is the first to provide a meta-analytic synthesis of perceived barriers, individual characteristics and demographic variables impacting help-seeking for disordered eating. The findings suggest that two key perceived barriers, denial/failure to perceive the severity of ED and perceived inability of others to provide help, were found to be significant factors associated with less help-seeking behaviour. The present study has important clinical implications for the design of interventions to promote help-seeking behaviour for EDs and may inform the development of early intervention strategies aiming to address these two specific barriers that individuals with EDs face.

Chapter 5

Measures[4]

Some of the content in this chapter appears in the Measures sections of two published papers that are provided in **Appendices C** and **D**.

Radunz, M., & Wade, T. D. (2023). Towards an understanding of help-seeking behaviour for disordered eating: Refinement of a barriers to help-seeking measure. *Early intervention in psychiatry* Online ahead of print. Doi: 10.1111/eip.13394

Radunz, M., Pritchard, L., Steen, E., Williamson, P., & Wade, T. D. (2021). Evaluating evidence-based interventions in low socio-economic-status populations. *International Journal of Eating Disorders*, 54(10), 1887-1895.https://doi.org/10.1002/eat.23594

Overview

This chapter details the self-report questionnaire measures utilised in **Chapters 6, 7** and **8**. Each measure is comprehensively described, including information on its psychometric properties and a discussion of its factor structure. To prevent repetition, subsequent chapters provide only brief descriptions of the measures discussed in this current chapter. The selected measures were chosen based on their robust psychometric properties related to the constructs of interest, which are expanded upon in this chapter.

Self-Report Questionnaire Measures

Global Eating Disorder Psychopathology

Description

The Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008) assesses global eating disorder symptomology, as well as providing four subscales: restraint, eating concern, shape concern and weight concern. Together, these subscales provide a 22-item global score. Questions survey the last 28 days and are measured on a 7-point Likert scale assessing either frequency (0 = *no* days to 6 = *every* day; 0 = *none of the* time to 6 = *every* time) or intensity (0 = *not at all* to 6 = *markedly*), where a higher score indicates either a greater frequency or severity. An example item includes: "*Have you had the definite desire to have an empty stomach with the aim of influencing your shape or weight?*". In addition to the four subscales, the EDE-Q also has six items surveying eating disorder behaviours, which include number of days where objective binge eating occurred and number of times over the last 28 days where vomiting, laxative use and driven exercise has occurred, with behavioural items rated as frequencies.

Factor Structure

The EDE-Q was developed by Fairburn and Beglin (2008) and derived based on semi-structured interviews rather than empirical grounds, with no factor analysis conducted during its development (Fairburn & Beglin, 1994). The first study to examine the factor structure of the EDE-Q was not until 2007, when Peterson and colleagues (2007) examined the four-factor structure of this measure in a clinical sample, finding support for the Eating Concern and Restraint subscale, with the shape and weight concern items loading onto one factor. Since then, several studies have examined the factor structure of the EDE-Q in various populations, with support for a four-factor structure being mixed across studies, with only two studies to date supporting this finding (Franko et al., 2012; Villarroel et al., 2011). A more recent review of studies examining the factor structure of the EDE-Q (Jenkins & Rienecke, 2022) summarises several studies which have found items from the Weight Concern and Shape Concern subscales to load onto one single factor. Although there is conflicting evidence regarding the use of a global EDE-Q index score, Jenkins & Rienecke (2022) review concluded that a 7-item version proposed by Grilo et al. (2015) had better and more consistent results in terms of model fit, showing robust fit in confirmatory factor analyses, good internal consistency, and measurement invariance by sex, self-identified gender, and overweight status (Grilo et al., 2015; Jenkins & Davey, 2020; Klimek et al., 2021). It is the only form of the EDE-Q to have supported factor structure, including the full version (Machado et al., 2020). Nonetheless, the 22-item EDE-Q global score was utilised in this thesis. This approach is consistent with the reporting practices of many other studies in the literature (Fairburn et al., 2009; Wade et al., 2011; Tatham et al., 2020; Pellizer et al., 2019) and facilitates comparison with previous research in the field.

In addition, the EDE-Q factor structure has also been examined among adolescent samples, with mixed findings.; Penelo et al. (2013) did not find support for the original 4-factor 22-item structure, instead revealing a 2-factor solution to provide best model fit in a Mexican adolescent sample. Similarly, Mantilla et al. (2017) also failed to find support for a 4-factor structure of the EDE-Q in a large sample of Swedish adolescent, finding support for a one-factor structure centred on dissatisfaction with Shape and Weight in adolescent girls, and weight related concerns and body discomfort/restraint in adolescent boys.

Reliability

The EDE-Q has demonstrated excellent internal consistency for the global eating disorder (ED) psychopathology subscale, with Cronbach’s alphas ranging from .93 to .95 (Calugi et al., 2017b; Machado et al., 2014; Mond et al., 2004). The EDE-Q global subscale has also demonstrated good test-retest reliability over a period of 2-4 weeks with correlation coefficients ranging from .80 to .93 (Calugi et al., 2017b; Reas et al., 2006; Ro et al., 2010).

Validity

The EDE-Q total score has demonstrated good discriminant validity by differentiating between participants with and without an ED (Machado et al., 2014; Ro et al., 2010). The EDE-Q has also been shown to correlate strongly with other measures of ED attitudes, such as the attitudinal scale of Eating Disorder Examination (EDE: Fairburn et al., 2008; Reas et al., 2011; Mond et al., 2004). In addition, the EDE-Q has demonstrated convergence validity with daily food records, with two studies using samples of treatment seeking adults for Binge Eating Disorder (BED) finding reported binge frequencies on the EDE-Q to correlate with the same behaviours reported on daily food records (Berg et al., 2012). Lastly, the 22-item version of the EDE-Q has been previously validated in adolescent populations, revealing good test-retest reliability and concurrent validity, demonstrating this measure to be acceptable, reliable and valid in adolescent samples (Lee et al., 2007; Yucel et al., 2011).

Eating Disorder Cognitions and Behaviours

Description

The Eating Disorder-15 (ED-15: Tatham et al., 2015) comprises of 10 items surveying eating disorder cognitions over the past week (e.g., "Felt distressed about my weight"), rated on a 7-point Likert scale from 0 "*not at all*" to 6 "*all the time*." The ED-15 includes two attitudinal subscales: the six-item Weight & Shape Concerns and the four-item Eating Concerns. Subscale scores are calculated by summing the scores of each of its respective items and dividing by the total number of items to obtain a subscale mean score. An overall cognition score can be calculated by adding all 10 items and dividing them by ten to obtain an overall mean cognition score. The remaining five items survey eating disorder behaviours, with participants reporting the number of times and days over the previous week they have engaged in: objective binge eating, vomiting, laxative use, dietary restriction, and driven exercise. The ED-15 was designed to be used as a session-by-session measure and complement more extensive questionnaires that are often provided at pre- and post-treatment assessment, such as the EDE-Q.

Factor Structure

The key principle of the ED-15 was to create a brief measure of core ED cognitions and behaviours to reflect eating psychopathology over the past week (Tatham et al., 2015). The items were developed by generating an initial pool of items by each author based on their clinical notes and cognitive records of their years of experience in delivering ED therapy. Following reduction strategies, a final sample of 11 cognition items were found. Exploratory Factor Analysis in a large sample of women (*N* = 438) revealed all factors to load clearly onto either the Weight & Shape Concern or Eating Concern factor, with one item with a factor loading < .5 being excluded, resulting in 10-items.

The structure of the ED-15 was further evaluated by Rodrigues et al. (2019) in a Portuguese sample of clinical and non-clinical participants, finding support for its two-factor structure. Similarly, Compte and colleagues (2022) examined the factor structure of the ED-15 in a non-clinical sample of Chilean female university students (*N* = 380), also finding support for the original two-factor structure proposed by Tatham et al. (2015).

Reliability

During its development, Tatham et al. (2015) reported high internal consistency for the Weight and Shape Concerns and Eating Concerns, with Cronbach Alphas of .94 and .80, respectively. These results have been replicated by other studies, reporting Cronbach's alphas ranging from .81 to .93 (Rodrigues et al., 2019; Compte et al., 2022). The ED-15 has also demonstrated good test-retest reliability, with *r*s ranging from .79 to .92 for the two cognition subscales and the overall cognition score (Tatham et al., 2015; Compte et al., 2022;

Rodrigues et al., 2019) and moderate-to good temporal stability for the five behavioural items, with *r*s ranging from .56 to .89 (Compte et al., 2022).

Validity

The ED-15 has demonstrated good discriminant validity, with a patient randomly selected having 80% probability of being correctly classified based on a higher global score than a non-case (Rodrigues et al., 2019). In addition, the total cognition score and the Weight and Shape concern and Eating concern subscales have been shown to have moderate to strong associations with subscales of the EDE-Q (Tatham et al., 2015), demonstrating good concurrent validity. Moreover, the ED-15 has demonstrated good convergent validity with measures of depression, anxiety and clinical impairment associated with eating (Rodrigues et al., 2019; Tatham et al., 2015; Compte et al., 2022).

Eating Disorder Risk

Description

Eating disorder risk was assessed using the Weight Concern Scale (WCS; Killen et al., 1994), which comprises of five-items scored on a 4-point, 5-point and 7-point Likert scales, aiming to screen for eating disorder risk. Sample questions include "*how afraid are you of gaining 3 pounds (1.36kg)"*, rated on a 5-point Likert scale ranging from 1 "*not afraid of gaining"* to 5 "*terrified of gaining*", "C*ompared to other things in your life, how important is your weight to you?*", rated on a 4-point Likert scale, ranging from 1 "*my weight is not important compared to other things in my life"* to 4 "*my weight is the most important thing in my life*" and "*Do you ever feel fat*?", rated on a 5-point Likert scale, ranging from 1 "*never*" to 5 "*always*". Given that each of the five items are scored on different Likert scales, each item is normalised to a 100-point scale and the scores of each of the five items are averaged to create a total score ranging from 0 to 100, where zero indicates no weight concerns and 100 indicates maximum weight concerns.

Factor Structure

The WCS was developed as part of a larger study (Killen et al., 1994) examining the effectiveness of a school-based intervention program design to prevent EDs in young adolescent girls (M^{age} = 12.7, *SD* = .72). The instrument was developed based on the theoretical framework of the cognitive behavioural model of EDs, with items designed to measure the frequency and intensity of thoughts and behaviours related to weight and dieting. Killen et al. (1994) used principal component analyses and found that weight concerns were highly associated with later onset of ED symptoms in their large sample of sixth and seventh-grade girls (*N* = 967) over a three-year period.

Since its development, two studies have examined the factor structure of the WCS (Dias et al., 2015; da Silva et al., 2017). Dias and colleagues (2015) examined the factor structure of the WCS in a large sample of university students in Brazil (*N* = 1084), finding an adequate fit (RMSEA = .08; CFI = .98). Similarly, da Silva and colleagues (2017) examined the factor structure of the WCS in a large sample (*N* = 2068) female university students in Brazil and Mozambique by conducting confirmatory factor analyses (da Silva et al., 2017), finding good model fit indices in both their Brazilian sample (RMSEA = .06, CFI = .99, TLI = .99) and Mozambican sample (RMSEA = .02, CFI = .99, TLI = .99). Over the years, the WCS has been utilised in numerous US college samples, and has been part of university-wide surveys, such as the Healthy Minds Study (Lipson et al., 2018), the German and Hungarian ProYouth programs (Kindermann et al., 2017; Szabo et al., 2015) and the Stanford-Washington University Eating Disorder Screen (Graham et al, 2019; Fitzsimmons-Craft et al., 2019).

Reliability

Across the various studies utilising the WCS, internal consistency has been good, with Cronbach's alphas ranging from .76 to .85 (Brasil et al., 2022; Forbush et al., 2014; Dias et al., 2015). WCS has demonstrated high test-retest reliability over a 7-month and 12-month period, with *r*s of .71 and .75, respectively (Killen et al., 1994; Killen et al., 1996).

Validity

The WCS has been found to have good convergent validity, as it correlates positively with measures of body dissatisfaction and weight concern, such as the Sick Control One Fat Food (SCOFF; Morgan et al., 1999) and the Body Shape Questionnaire (Cooper et al., 1987), and has correlated negatively with measures of depression and anxiety (Brasil et al., 2022). Moreover, the WCS has sound predictive validity, with many studies supporting the use of a cut-off score of 47 and above in predicting ED cases (Killen et al., 1994; Killen et al., 1996; Jacobi et al., 2011).

Clinical Impairment

Description

The Clinical Impairment Assessment (CIA; Bohn et al., 2008) is a 16-item self-report measure surveying the last 28 days, with items covering impairment in life domains secondary to EDs, which include mood and self-perception, cognitive functioning, interpersonal functioning, and wok performance. Each item (e.g., "*Over the past 28 days, to what extent have your eating habits, exercising or feeling about your eating, shape or weight made it difficult to concentrate?*") is rated on a 4-point Likert scale from 0 "*not at all*" to 3 "*a lot*". The CIA provides a single index of the severity of psychosocial impairment with scores ranging from 0 to 48, higher scores are indicative of greater psychosocial impairment. A CIA global impairment score of 16 is used as a cut-off point for predicting eating disorder status (Bohn et al., 2008). Bohn et al. (2008) proposed that the CIA be utilised as a supplementary assessment tool to the EDE-Q and recommended that it be administered immediately following it.

Factor Structure

The factor structure of the CIA was examined using exploratory factor analysis in the original study by Bohn et al. (2008). The results of the factor analysis indicated that the CIA is a unidimensional measure of clinical impairment associated with ED symptoms, thus all 16 items in the measure are assessing the same underlying construct of clinical impairment, thus supporting the use of the global and domain-specific scores, which is consistent with the theoretical framework of the measure (Bohn et al., 2008). The original factor structure of the CIA has been replicated in studies using confirmatory factor analysis in clinical ED populations and healthy controls (Jenkins, 2013; Calugi et al., 2018). However, there is contradictory evidence that proposes a bifactor pattern supports a best model fit, with a universal factor impacting results on all measures and three less reliable subfactors (Maraldo et al., 2021; Raykos et al., 2019), thus supporting the use of a total score but not subscale scores. Since the use of CIA subscales has been found to be unreliable and the measure is unidimensional, we only present CIA global scores in this thesis.

Reliability

The CIA has demonstrated sound reliability with studies reporting Cronbach's alphas ranging from .91 to .97 (Bohn et al., 2008; Calugi et al., 2018; Jenkins, 2013). The measure has also demonstrated good test-retest reliability from seven to 24 days ($r = .74$; Calugi et al., 2018; $r = .94$; Reas et al., 2010; $r = .86$; Bohn et al., 2008).

Validity

The CIA has demonstrated good construct validity with measures of ED psychopathology such as the EDE-Q, with *r*s ranging from .70 to .89 (Vannucci et al., 2021; Calugi et al., 2018; Bohn et al., 2008), and the EDE ($r = .62$; Jenkins, 2013). Moreover, the CIA has also demonstrated good construct validity with clinician impairment ratings ($r = .68$; Bohn et al., 2008) and measures of depression ($r = .51$) and anxiety ($r = .50$; Jenkins, 2013).

The CIA has good discriminant validity and can differentiate between ED severity, with one study reporting CIA global scores being higher among women with a clinical ED, followed by women at high risk for ED onset and women at low risk, respectively (Vanucci et al., 2012). This is consistent with other studies, which have found higher global CIA scores for those engaging in disordered eating behaviours versus those that do not (Jenkins, 2013; Bohn et al., 2008).

Negative Affect

Description

The Depression Anxiety and Stress Scales (DASS-21; Lovibond & Lovibond, 1995) is a 21-item measure assessing the negative emotional states that commonly accompany depression, anxiety and stress. For each item, participants are asked to choose a number that best described their experience of a statement over the past week (e.g., "*I was unable to become enthusiastic about anything*"). Items are rated on a 4-point Likert scale ranging from 0 "*did not apply to me at all*" to 3 "*Applied to me very much or most of the time*". This self-report questionnaire consists of three subscales (Depression, Anxiety and Stress) and combined the three subscales produce an overall general negative affect score, with higher scores reflecting greater negative affect. In this thesis, we utilised the mean score of each of the three subscales as individual measures of their respective constructs, instead of measuring overall negative affect.

Factor Structure

The factor structure of the DASS-21 has been studied using both exploratory and confirmatory factor analysis methods, and results have been varied across studies. Some studies have found support for a three-factor structure of the DASS-21, with items loading onto the three distinct factors, namely depression, anxiety, and stress. For example, Daza et al. (2002) examined a Spanish translated version of the DASS-21 in a small clinical sample of Hispanic patients (*N* = 98), finding that a three-factor structure produced better model fit than a one-factor structure. Similarly, Sinclair and colleagues (2012) examined the factor structure of the DASS-21 in a non-clinical sample of North American adults and found support for a three-factor structure when compared to a one-factor model. However, other studies (Henry & Crawford, 2005; Osman et al., 2012) found support for a bifactor model including a general psychological distress factor. For example, Henry and Crawford (2005) found that the DASS-21 had a clear three-factor structure in a sample of Australian university students, but a quadripartite model with the inclusion of a general distress factor improved model fit, with all items loading onto this factor with loadings of at least .36. Osman and colleagues (2012) found similar results when conducting exploratory and confirmatory factor analyses in two university student samples. Moreover, Szabo (2010) examined the factor structure of the DASS-21 in an adolescent sample ($M^{age} = 13.62$), also finding support for a quadripartite model including a common negative affect factor.

Reliability

Given the DASS-21 is a widely used self-report questionnaire measuring negative affect, its reliability has been extensively examined, with studies reporting good reliability. Internal consistency has been found to be high for each of the three subscales (Henry & Crawford, 2005), with Cronbach’s alpha coefficients ranging from 0.81 to 0.97 for the depression subscale, 0.72 to 0.92 for the anxiety subscale and 0.78 to 0.92 for the stress subscale across various studies (Coker et al., 2018; Asghari & Dibajnia, 2008; Henry & Crawford, 2005). Further, the DASS-21 has good test-retest reliability, with correlation ranging from 0.54 to 0.90 over periods ranging from two weeks to three months (Yildirim et al., 2018; Gomez et al., 2014).

Validity

The DASS-21 has demonstrated good discriminant validity by differentiating between clinical and non-clinical cases (Henry & Crawford, 2005; Asghari & Dibajnia, 2008). It has also demonstrated sound convergent validity by correlating with validated measures of anxiety, depression, and psychological distress in both adult and adolescent populations (Le et al., 2017; Antony et al., 1998; Henry & Crawford, 2005).

Help-Seeking Attitudes

Description

The 10-item Attitudes Towards Seeking Professional Psychological Help Scale – Short Form (ATSPPH-SF; Fischer & Farina, 1995) assesses participants attitudes towards help seeking for psychological problems. Sample items include: "*If I believed I was having a mental breakdown, my first inclination would be to get professional attention*" and "*I would want to get psychological help if I were worried or upset for a long period of time.*" Items are rated on a 4-point Likert scale ranging from 0 "*disagree*" to 4 "*agree*". The ATSPPH-SF produces a total score ranging from 0 to 30, with higher scores reflecting stronger attitudes towards seeking professional help.

Factor Structure

The ATSPPH-SF is a briefer and more modern version of the original 29-item ATSPPH Questionnaire (Fischer & Turner, 1970). The shorter version of the ATSPPH was derived from using 14 of the original 29 items with the highest item-total correlations (Fischer & Farina, 1995). Factor analysis of the shortened version was conducted with a sample of university students ($N = 389$), revealing a two-factor structure, with one factor containing 10 items relating to a willingness to seek psychological help and a second factor containing the remaining four items relating to disclosure/interpersonal openness dimension. Given low internal consistency of the second factor (Cronbach's alpha = .64), the four items were removed resulting in a one-factor 10-item solution.

Since the development of the ATSPPH-SF scale, there have been inconsistent findings to support its one-factor structure. Elhai et al. (2008) examined the factor structure of the ATSPPH-SF in a sample of university students (*N* = 296) and primary care patients (*N* = 389) using confirmatory and exploratory factor analyses. In the university student sample, CFA did not support either a one- or two-factor solution, with EFA supporting a two-factor structure, namely Openness to Seeking Treatment for Emotional Problems and Value and Need in Seeking Treatment. In their sample of primary care patients (*N* = 389), CFA did not support a one-factor solution, but the two-factor solution identified in their university student EFA was supported in this sample of medical patients (RMSEA = .06. CFI = .94, TLI = .92).

Moreover, inconsistencies have been found in the factor structure of the ATSPPH-SF across Asian samples, with Ang et al. (2007) finding poor model fit for a one- and two-factor structure in their CFA in two separate samples of participants from Singapore. However, support for a unidimensional model was found for a 9-item version of the scale with the removal of a double-barrelled item ("*A person with an emotional problem is not likely to solve it alone; they are likely to solve it with professional help*").

Torres et al. (2021) also failed to support a unidimensional factor structure in a sample of Latino adults (*N* = 437), instead replicating findings from Elhai et al. (2008) and finding support for a two-factor structure, comprising 5-item Openness to Seeking Treatment for Emotional Problems and 5-item Value and Need in Seeking Treatment factors.

Reliability

The ATSPPH-SF has demonstrated acceptable internal consistency for its total score, with Cronbach's alphas ranging from .77 to .84 (Fischer & Farina, 1995, Komiya et al., 2000; Constantine, 2002; Elhai et al., 2008). The measure has demonstrated good one-month test-retest reliability (*r* = .80; Fischer & Farina, 1995).

Validity

The ATSPPH-SF has demonstrated good convergent validity by correlating with the original 29-item version ($r = .89$; Fischer & Farina, 1995). Moreover, higher scores on the ATSPPH-SF have been associated with university students' self-report of previous mental healthcare use, with students reporting no mental healthcare use scoring lower on the scale (Fischer & Farina, 1995; Elhai et al., 2008). Higher scores on the ATSPPH-SF have also been associated with lower stigma of seeking mental health treatment, as well as increases in emotional disclosure (Komiya et al., 2000; Constantine, 2002).

Barriers to Treatment Seeking

Description

The Perceived Barriers to Psychological Treatment (PBPT; Mohr et al., 2010) was used to assess perceived barriers to help-seeking. This 27-item measure investigates how difficult each potential barrier would make it for individuals to attend weekly therapy appointments, the level of difficulty is rated on a 5-point Likert scale ranging from 1 "*not at all difficult*" to 5 "*impossible*". Example items include: "*Problems with transportation (no car, parking problems, poor public transportation*", "*the cost of counselling*", and "*attending counselling is too self-indulgent*". Higher scores reflect a higher level of difficulty to attending sessions. A total score can be derived from all 27 items, assessing nine key barriers: (1) stigma, (2) lack of motivation, (3) emotional concerns, (4) negative evaluations of therapy, (5) misfit of therapy to needs, (6) time constraints, (7) participation restriction, (8) availability of services and (9) cost.

Factor Structure

The PBPT was developed to assess perceived barriers to psychological treatment for mood disorders. Scale items were derived from a previous survey (Mohr et al., 2006), where 260 primary care patients rated eight barriers identified from the literature and were asked to provide qualitative responses on further barriers that were not included in the survey.

Clinicians condensed items until a consensus was reached resulting in a final 27 barrier items. The development and factor structure of the 27-items was then examined in a large sample (*N* = 658) of primary care patients (Mohr et al., 2010), with the sample being randomly split in half resulting in 327 participants in EFA and 331 in CFA. Of the 27-items, three items (2, 3 and 15) were excluded from the EFA because of their low item-total correlations (<.36). An eight-factor model was the best solution in the EFA (RMSEA = .07; CFI = .98), with four items cross-loading on two factors. Subscales scores were created by summing all items within each of the eight factors. The eight-factor structure was cross-validated in the CFA sample and revealed acceptable fit (RMSEA = .07; CFI = .92).

Innes et al. (2018) examined the factor structure of the PBPT with a disordered eating sample using EFA and CFA. A 24-item 7-factor solution was supported in EFA (*N* = 342), with stigma, participation restriction, negative evaluation of treatment, lack of motivation, emotional concerns, access restriction and time constraints as factors (RMSEA = .06; TLI = .91). A secondary EFA conducting with only clinical cases (*N* = 241) supported the solution retaining 25 of the original 27 items (RMSEA = .06; TLI = .91). The 25-item seven factor solution was further supported in their CFA with an independent sample (*N* = 354) suggesting this measure to be a reliable method of assessing treatment seeking in disordered eating samples (RMSEA = .05; TLI = .94).

Reliability

The PBPT has been reported to have good reliability in samples of mood disorders, with Cronbach's alpha for the total scale of .92 and for the subscales ranging from .71 to .89 (Mohr et al., 2010). In disordered eating samples, the internal consistency for the overall scale was reported to be high, with Cronbach's alpha of .91, with internal consistency for the seven subscales ranging from .67-.89 (Innes et al., 2018). To our knowledge, the temporal stability of this measure has not been examined.

Validity

Mohr et al. (2010) examined the criterion validity of the PBPT by evaluating participants' current psychological treatment with PBPT subscales. The authors found that participants who scored lower on barriers relating to time constraints, misfit of therapy to needs, availability of services and cost were more likely to report current psychotherapy attendance. On the other hand, current psychotherapy attendance was not related to stigma, lack of motivation or emotional concerns (Mohr et al., 2010). Regarding disordered eating samples, the PBPT total score has demonstrated good construct validity highlighted by moderate correlations ($r = .41$) with the General Help Seeking Questionnaire item "*I would not seek help from anyone*". At the subscale level, the PBPT stigma subscale was strongly associated with this General Help Seeking Questionnaire item ($r = .45$), as well as the moderately associated with the overall General Help Seeking Questionnaire score ($r = -.28$).

Chapter 6

Towards an Understanding of Help-Seeking Behaviour for Disordered Eating: Refinement of a Barriers to Help-Seeking Questionnaire[5]

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[5] The study described in this chapter was published and can be found in **Appendix C**. Marcela Radunz contributed 80%, 100% and 80%, and Tracey Wade contributed 20%, 0% and 20% to the research design, data collection and analysis, and writing and editing respectively.

Radunz, M., & Wade, T. D. (2023). Towards an understanding of help-seeking behaviour for disordered eating: Refinement of a barriers to help-seeking measure. *Early intervention in psychiatry* Online ahead of print. Doi: 10.1111/eip.13394

Abstract

Research on barriers to treatment seeking in eating disorders (EDs) is an emerging field and the presence of validated measures is currently lacking. The present study examined the factor structure of the Perceived Barriers to Psychological Treatment scale (PBPT; Mohr et al., 2010) and a combination of PBPT and Barriers to Seeking Help for ED items (BATSH-ED; Ali et al., 2020) with respect to treatment-seeking for EDs. Participants were 456 female university students aged 17-25 reporting a full range of disordered eating. Confirmatory factor analyses were conducted followed by correlational and regression analyses to assess validity of the selected questionnaire items. Four models were tested. First, we replicated the original PBPT 8-factor structure in our sample with comparable fit indices. Second, the addition of six ED items comprising Denial and Ambivalence subscales improved model fit. Third and fourth, when only significant subscales predicting treatment seeking were retained, with removal of items with weak loadings, a 15-item six-factor solution provided a best fit. A range of psychosocial measures had relationships in the expected directions with the questionnaire subscales. In addition to disordered eating, the denial subscale was a unique predictor of treatment seeking. The present study highlights the importance in advancing this literature by developing robust measures to assess barriers to treatment seeking in disordered eating populations, which furthers our understanding of what prevents people with EDs from seeking treatment and has the potential to inform effective early intervention strategies to improve rates of help-seeking among this population.

Introduction

In **Chapter 4**, a systematic review and meta-analysis of barriers to help-seeking significantly contributed to this emerging body of literature by providing the first quantitative synthesis of barriers to help-seeking for eating disorders (EDs). Denial of illness or the failure to perceive the severity of the disorder and the perceived ability of others to provide help were found as the only two perceived barriers associated with less help-seeking behaviour. Further progress in understanding the role of these barriers is hampered by the lack of validated measures assessing barriers to treatment seeking. Out of the few quantitative studies available, many tended to develop their own idiosyncratic measures without justification for their choice of item and failed to report on the psychometric properties of these measures (Innes et al., 2017).

To address this gap in the literature, Innes and colleagues (2018) examined the factor structure of the Perceived Barriers to Psychological Treatment scale (PBPT; Mohr et al., 2010), in a disordered eating sample. The PBPT is a 27-item scale originally validated in a sample of individuals with mood disorders, and comprises of eight-factors measuring stigma, lack of motivation, emotional concerns, negative evaluations of therapy, misfit of therapy to needs, time constraints, participation restriction and access to services. Confirmatory factor analysis supported a 25-item 7-factor solution to be a valid and reliable method of assessing treatment seeking barriers in the disordered eating samples (*TLI = 0.94, RMSEA = .05 [95% CI: .04., .06*]).

The PBPT, however, was designed for mood disorders and does not include subscales relevant to EDs, namely denial or failure to perceive severity of illness and ambivalence. Denial has been consistently identified as a barrier to help-seeking for EDs across many studies in the literature (Akey et al., 2013; Ali et al., 2020; Cachelin et al., 2006; Becker et al. 2004; Griffiths et al., 2018). Failure to identify an ED as severe or problematic is associated with lower intent to seek help. For example, in a sample of 1002 Australian school students who met DSM-5 diagnostic criteria for an ED, those who self-identified with having a body image problem were shown to be 2.71 times more likely to seek help than those who did not (Fatt et al., 2021). Similarly, ambivalence has been a well-documented phenomenon, which refers to a strong fear of change, including gaining weight or losing the perceived positive aspects of the ED, which prevents people from seeking help (Gulliksen et al., 2015; Hepworth & Paxton, 2007). While Ali and colleagues (2020) developed a help-seeking measure for EDs (Barriers to Seeking Help for EDs [BATSH-ED] with 40 items representing 15 different barriers) informed by themes identified in their 2017 review, there is no report on the psychometric properties of this measure.

The present study examines the factor structure of the PBPT in a female university sample who reported a wide range of disordered eating severity. University students represent an age group in which emergence of disordered eating is common and have an elevated prevalence of EDs compared to the general population (Fitzsimmons-Craft et al., 2019). We then tested two further factor structures; one with PBPT subscales supplemented with a selection of BATSH-ED items (Ali et al., 2020), and one that only retained BATSH-ED items and PBPT subscales that predicted treatment seeking in women who had disordered eating in our sample. We examine the validity of the best fitting structure against other variables, including attitudes to treatment seeking, eating disorder psychopathology, mood (depression, anxiety, and stress), socio-economic-status (SES) and body-mass-index (BMI).

Method

Participants and procedure

Participants were females aged 17-25 who responded to an advertisement titled "*Attitudes towards help-seeking for eating and body image concerns*". Inclusion criteria were: (1) female, (2) aged 17-25; (3) have eating or body image concerns. Participants volunteered via the Flinders University School of Psychology research pool and received course credit for their participation in the 20-minute online survey. The project was approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number:1953). In total, 555 survey responses were completed, 99 responses were removed (*N* = 18 did not meet inclusion criteria; *N* = 81 duplicate responses), resulting in a final sample of 456 participants. Data collection commenced in July 2020 and was concluded in December 2021.

Measures

Sociodemographic variables

BMI was calculated using kg/m^2. SES was measured by self-reported postcode, which was then used to generate a Socio-Economic Index for Area (SEIFA, 2016) mean score where a quintile score of 1 and 5 represents the most disadvantaged and advantaged areas respectively.

Eating Disorder Risk

The five-item Weight Concern Scale (WCS; Killen et al., 1994) yields a score from 0 to 100, with scores greater than 47 demonstrating good predictive validity for the development of an ED (Jacobi et al., 2011; Killen et al., 1994; 1996). In a previous study of female university students (Zhou et al., 2020), 94% of participants meeting the cut-off score reported engaging in disordered eating behaviours in the previous month and 73.8% received an EDE-Q Global score that was higher than the clinical cut-off (i.e., ≥ 2.77) for young adult women (Mond et al., 2006a). In the current study, a dichotomised low ED risk (≤ 47) and high ED risk (> 47) score was used to examine mean differences and invariance testing across the two eating disorder risk groups.

Eating Disorder Symptomology

The 22-item Eating Disorder Examination Questionnaire (EDE-Q 6.0; Fairburn & Beglin, 2008) was used to assess global eating disorder symptomology over the last 28 days on a 7-point Likert scale (ranging from 0 to 6). A higher score indicates either a greater frequency or severity. The EDE-Q has been validated in clinical ED populations and the general population (Berg et al., 2012). In the present study, Omega total of the subscale was .96.

Psychological Distress

The Depression Anxiety and Stress Scales (DASS-21; Lovibond & Lovibond, 1995) consists of 21-items rated on a 4-point Likert scale ranging from "did not apply to me at all" (0) to "nearly every day" (3), with higher scores reflecting greater negative affect. Use of the three subscales have been validated (Henry & Crawford, 2005) and Omega totals in the present study were .92, .86 and .85 respectively.

Help-Seeking Attitudes

The 10-item Attitudes Towards Seeking Professional Psychological Help Scale – Short Form (ATSPPH-SF; Fischer & Farina, 1995) has items rated on a 4-point Likert scale ranging from "disagree" (0) to "agree" (4), with higher scores reflecting more positive attitudes towards seeking professional help e.g., "If I believed I was having a mental breakdown, my first inclination would be to get professional attention". The ATSPPH-SF has been validated in university students and clinical populations (Elhai et al., 2008). Omega total in the present study was .77.

Treatment Seeking Status

To determine treatment seeking status, participants were asked: "Have you previously sought treatment for eating or body image concerns?". Participants responded with "*yes*" (coded as 1) or "*no*" (coded as 0).

Barriers to Help-Seeking

The 27-item PBPT (Mohr et al., 2010) investigates barriers to individuals attending weekly therapy appointments with items rated on a 5-point Likert scale, ranging from “not difficult at all” (1) to “impossible” (5). Higher scores reflect a higher level of difficulty. A total score is derived from all 27 items. A previous CFS (Mohr et al., 2010) supported an eight-factor structure, with four items being repeated in more than one factor (items 13, 20, 25 and 26) and three items being excluded altogether (items 2, 3 and 15), thus resulting in a 28-item 8-factor solution. In the present study, participants were asked “We would like you to rate the degree to which different kinds of problems might get in the way of seeing a therapist for eating or body image concerns”. Omega total for the total PBPT scale in the present study was .92.

Additionally, nineteen items were selected from the BATSH-ED that complemented items which were not captured by the PBPT **(Table 6.1)**. Items were rated on a 5-point Likert scale, ranging from “strongly disagree” (1) to “strongly agree” (5), with higher scores reflecting greater personal resistance to help-seeking.

Table 6.1

Selected items from the Barriers Towards Seeking Help for Eating Disorders (BATSH-ED; Ali et al., 2020)

Item Number	**Item Content**
BATSH-ED 1	I don’t believe I have a problem
BATSH-ED 2	I don’t want others to worry about my problems
BATSH-ED 3	I don’t believe I need help
BATSH-ED 4	If I need help I will turn to my friends
BATSH-ED 6	I don’t know where to find information about getting help
BATSH-ED 7	I am afraid of being labelled (e.g., as crazy, mentally ill, having an eating disorder)
BATSH-ED 8	I don’t know much about the signs of eating and body image concerns
BATSH-ED 12	I can handle my problems on my own
BATSH-ED 13	I am not ready to change my eating behaviour
BATSH-ED 17	I don’t think anybody understands my problems
BATSH-ED 19	My family members are not supportive of me in seeking help
BATSH-ED 22	My friends are not supportive of me in seeking help
BATSH-ED 24	I don’t know about available treatment resources
BATSH-ED 27	I know my problems are serious, but I don’t want to lose them
BATSH-ED 29	I don’t want to lose control over my eating or weight (e.g., put on weight)
BATSH-ED 34	I don’t know where to find information about eating and body image concerns
BATSH-ED 36	If I need help, I will turn to my family
BATSH-ED 39	I don’t feel that my problems are serious enough to warrant treatment
BATSH-ED 40	I feel too depressed and anxious to look for help

Note. BATSH-ED = Barriers Towards Seeking Help for Eating Disorders

Statistical Analyses

CFA was performed with Mplus software version 7.31, using weighted least squares with mean and variance adjustment (WLSMV), for categorical data (Brown, 2015). The following models were tested: Model 1, replication of the original factor structure of the PBPT (Mohr et al., 2010); Model 2, addition of ED relevant items using a selection of BATSH-ED items (Ali et al., 2020); Model 3 retained only subscales shown to be significant in predicting differences between treatment seekers and non-treatment seekers for those women who met the WCS cut-off score. Chi-square values are sensitive to large samples, and nearly always significant (Byrne, 2012), so each model was judged on the following indices: Root-mean-square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker Lewis Index (TLI) with the following *a priori* benchmarks: good fit RMSEA <0.10; CFI/TLI ≥ 0.9 and excellent fit RMSEA <0.06; CFI/TLI ≥ 0.95 (Schreiber, Stage, King, Amaury & Barlow, 2006).

Given the unrealistic assumptions of Cronbach’s alpha (e.g., McNeish, 2018), internal consistency was assessed using Omega total and item-total range. Omega total may be interpreted as per Cronbach’s alpha (McNeish, 2018) with scores $\geq .7$ as acceptable (Pallant, 2013). For item-total correlations $> .3$ is considered acceptable, with negative correlations considered highly problematic (Field, 2009).

Factor invariance between participants displaying low or high ED risk was evaluated by testing three nested models: Configural Invariance, Metric Invariance, and Full Invariance. The Configural Invariance Model estimates separate factor loadings and item threshold values (cut points between the ordinal responses) between the two risk groups, representing the “baseline” model against which the subsequent two models are compared. The Metric Invariance Model fixes the factor loadings for each item to be equivalent across the two risk groups but allows the item thresholds to differ. The Full Invariance Model fixes both the factor loadings and item threshold values between low ED risk and high ED risk.

All remaining analyses were conducted using the Statistical Package for Social Sciences, Version 28 (SPSS; IBM Corp., 2021). Pearson correlations were performed to evaluate the relationship between the identified factors from the CFA with other variables. Logistic regression was conducted to evaluate the unique contribution of BMI, global eating disorder psychopathology, depression and anxiety entered in the first step, followed by all factors identified from the CFA entered in the second step, to treatment seeking status as the dependent variable.

Results

Description of Participants

Participants (n = 456) included 261 (57.2%) high ED risk where 25.7% (*n* = 67) reported previously seeking help for eating or body image concerns compared to 9.8% of the low ED risk group. When comparing high risk treatment seekers, high risk non-treatment seekers, and low risk, both high ED risk groups had a significantly higher BMI than those in the low ED risk group (**Table 6.2**). Those in the high ED risk with previous treatment seeking displayed higher ED psychopathology than the other two groups.

Table 6.2

Demographic characteristics, eating disorder symptomology, negative affect, and attitudes to help-seeking for with low ED risk, and high ED risk by treatment seeking status.

Variable Mean (Standard deviation) or Percentage	**Low ED risk (*n* = 195)**	**High ED risk with previous Tx seeking (*n* = 67)**	**High ED risk with no previous Tx seeking (*n* = 194)**	**F (df), *p* χ^2 (df), *p***
Age	19.59 (*1.66*)	20.04 (*2.02*)	19.74 (*1.80*)	1.36 (2, 451), *.26*
BMI	22.27 (*3.52*) ^{bc}	25.64 (*6.16*) ^{a}	25.52 (*6.70*) ^{a}	19.22 (2, 435), *<.001*
Underweight (%)	10.8 (*n* = 20) ^{bc}	3 (*n* = 2) ^{a}	2.6 (*n* = 5) ^{a}	11.49 (2), *.01*
Healthy weight (%)	70.8 (*n* = 131) ^{bc}	55.2 (*n* = 37) ^{ac}	54.6 (*n* = 106) ^{ab}	7.74 (2), *.02*
Overweight (%)	13.5 (*n* = 25) ^{c}	20.9 (*n* = 14) ^{c}	21.1 (*n* = 41) ^{ab}	5.44 (2), *.07*
Obese (%)	4.9 (*n* = 9) ^{c}	19.4 (*n* = 13) ^{c}	14.9 (*n* = 29) ^{ab}	15.60 (2), *<.001*
SEIFA Total score	1000.76 (*75.27*)	999.78 (*76.56*)	1004.16 (*64.17*)	.15 (2), *.86*
SEIFA Quintile score	3.26 (*1.53*)	3.28 (*1.51*)	3.32 (*1.50*)	.26 (2), .77
EDE-Q global (M, *SD*)	1.76 (.89) ^{bc}	4.41 (*1.02*) ^{ac}	3.62 (*1.04*) ^{ab}	263.84 (2, 453), *<.001*
Depression	.83 (*.72*) ^{bc}	1.46 (*.72*) ^{ac}	1.23 (*.76*) ^{ab}	24.29 (2, 453), *<.001*
Anxiety	.88 (*.67*) ^{bc}	1.47 (*.77*) ^{ac}	1.14 (*.67*) ^{ab}	19.80 (2, 452), *<.001*
Stress	1.15 (*.66*) ^{bc}	1.82 (*.60*) ^{ac}	1.49 (*.62*) ^{ab}	31.95 (2, 452), *<.001*
ATSPPH-SF	1.99 (*.53*) ^{c}	2.02 (*.54*) ^{c}	1.84 (*.53*) ^{ab}	4.89 (2, 452), *.01*

Notes: M = mean; SD = standard deviation; *n* = number of participants; % = percentage; Tx = treatment; WCS = Weight Concerns Scale; EDE-Q = Eating Disorder Examination Questionnaire; ATSPPH = Attitudes Towards Seeking Professional Psychological Help-Short Form; Superscripts denote which groups differ significantly from each other in post-hoc comparisons: ^{a} = significantly differs from low ED risk; ^{b} = significantly differs from high ED risk with previous Tx seeking; ^{c} = significantly differs from high ED risk with no previous Tx seeking.

Preliminary Analyses

Data were checked for normality (Tabachnick and Fidell 2012). Across all measured variables there was less than 5% missing data, with the most missing data being for participant height (n = 11 missing values) and weight (n = 12 missing values). In addition, analyses were conducted to examine differences between the high ED risk group (n = 261) across treatment seekers and non-treatment seekers for PBPT subscales and BATSH-ED items. This was conducted by contrasting the mean and standard deviations of the two groups on each of the continuous PBPT and BATSH-ED variables using an online effect size calculator (Campbell Collaboration tool: https://www.campbellcollaboration.org/research-resources/effect-size-calculator.html), which generated r coefficients. The strength of group differences was determined based on regular correlation benchmarks (.10 - .30 = small association; .30 - .50 = medium association; .50 – 1.00 = large association). Five BATSH-ED items significantly differentiated between treatment seekers and non-treatment seekers (**Table 6.3**). This included item 1: "*I don't believe I have a problem*", item 3: "*I don't believe I need help*", item 8: "*I don't know much about the signs of eating and body image concerns*", item 27: "*I know my problems are serious, but I don't want to lose them*" and item 39 "*I don't feel that my problems are serious enough to warrant treatment*". BATSH items 1, 3 and 39 can be conceptualised as "denial" or "failure to perceive illness severity", whereas item 27 taps into ambivalence. Given the importance of measuring denial and ambivalence as barriers to treatment seeking in the EDs, the three items (1, 3 and 39) tapping into denial were selected to be included as an additional subscale, with item 27 being selected along with item 17: "*I don't think anybody understands my problems*", and item 29: "*I don't want to lose control over my eating or weight* (*e.g., put on weight*)" to comprise an "ambivalence" subscale. Although BATSH item 8 revealed a strong relationship between treatment seekers and non-treatment seekers, this item was not selected, as the original PBPT scale already taps into “not knowing where to find counsellor/therapist.”

Confirmatory Factor Analyses

Three models were initially tested (**Table 6.4**). Model 1 (original PBPT factor structure) demonstrated a good fit and replicated the original 8-factor structure of the PBPT. Internal consistency was borderline for Misfit of Therapy to Needs and Availability of Services subscales based on Omega totals (.67, .61 respectively), but acceptable based on item-total correlations (all >.33). Model 2 tested the addition of six BATSH items, which comprised two three-item subscales (Denial and Ambivalence). The addition of these subscales improved the overall model fit from Model 1, however, the additional subscales demonstrated borderline internal consistency for the Denial subscale (Omega total = .69) and poor internal consistency for the Ambivalence subscale (Omega total = .45). Based on item-total correlations, both subscales contained problematic items, which included Denial item 39 (.20), and Ambivalence items 17 (.27) and 39 (.18).

Model 3 retained only subscales demonstrating a significant difference between treatment seekers and non-treatment seekers for those at high risk for disordered eating (**Table 6.3**), which revealed weak relationships for the PBPT Stigma, Emotional Concerns, Misfit of Therapy to Needs and Availability of Services subscales, thus these subscales were removed from Model 3. The removal of four original PBPT subscales maintained a good overall model fit based on model fit indices.

We tested a fourth model to refine Model 3 by removing items with weak factor loadings (<.4). This included the removal of three items: PBPT item 1 (.38) from Participant Restriction, as well as BATSH item 39 (.23) from Denial and item 29 (.25) from Ambivalence. Therefore, Model 4 had a total of 15 items, a significant reduction from the original 28-item PBPT scale. This model had the best fit indices with a better RMSEA from Models 1 and 2, and overall improvement in CFI, TLI and AIC values across the board. In addition, the removal of weak items improved internal consistency across the board. However, the two-item Ambivalence subscale continued with poor internal consistency based on Omega totals (.48), although a significant improvement in item-total correlations from previous models (both items = .32). Taken together, Model 4 was the preferred model, as it improved the model fit from the original PBPT questionnaire (Model 1) and significantly decreased total number of items but ensured the addition of four items more pertinent to ED. This was therefore the model examined in the remaining analyses.

Table 6.3

Means (standard deviations) and correlation coefficients (95% confidence interval) for barriers to help-seeking measures by participant treatment seeking status for high ED risk group

Subscale/item number	**Previous Tx seeking (*n* = 67)**	**No previous Tx seeking (*n* = 194)**	**r (95% CI)**
PBPT Total	2.47 (*.69*)	2.28 (*.63*)	-.13 (-.25, -.01)
PBPT Stigma	2.49 (*1.01*)	2.43 (*.89*)	-.03 (-.15, .09)
PBPT Lack of Motivation	2.85 (*1.13*)	2.52 (*1.08*)	-.13 (-.25, -.01)
PBPT Emotional Concerns	2.73 (*1.08*)	2.56 (*1.02*)	-.07 (-.19, .05)
PBPT Negative Evaluations of Therapy	2.71 (*1.01*)	2.29 (*.89*)	-.20 (-.31, -.08)
PBPT Misfit of Therapy to Needs	2.53 (*1.00*)	2.49 (*.87*)	-.02 (-.14, .10)
PBPT Time Constraints	2.88 (*1.06*)	2.56 (*1.03*)	-.14 (-.26, -.02)
PBPT Participation Restriction	1.75 (*.86*)	1.52 (*.74*)	-.13 (-.25, -.01)
PBPT Availability of Services	2.59 (*1.01*)	2.41 (*.91*)	-.09 (-.21, .03)
PBPT Cost of Psychotherapy	3.29 (*1.10*)	3.12 (*1.18*)	-.07 (-.19, .05)
BATSH-ED 1	2.73 (*1.08*)	3.10 (*1.06*)	.15 (.03, .27)
BATSH-ED 2	4.04 (*.99*)	4.10 (*.79*)	.03 (-.09, .15)
BATSH-ED 3	2.87 (*1.18*)	3.39 (*1.04*)	.21 (.09, .32)
BATSH-ED 4	2.76 (*1.21*)	2.90 (*1.23*)	.05 (-.07, .17)
BATSH-ED 6	2.39 (*1.19*)	2.34 (*1.02*)	-.02 (-.14, .10)
BATSH-ED 7	3.13 (*1.35*)	3.01 (*1.27*)	-.04 (-.16, .08)
BATSH-ED 8	2.43 (*1.21*)	3.06 (*1.06*)	.24 (.12, .35)
BATSH-ED 12	3.21 (*1.07*)	3.49 (*1.04*)	.12 (-.01, .24)
BATSH-ED 13	2.87 (*1.28*)	2.85 (*1.12*)	-.01 (-.13, .11)
BATSH-ED 17	2.93 (*1.27*)	2.88 (*1.16*)	-.02 (-.14, .10)
BATSH-ED 19	2.43 (*1.76*)	2.27 (*1.30*)	-.05 (-.17, .07)
BATSH-ED 22	1.99 (*1.30*)	1.87 (*.91*)	-.05 (-.17, .07)
BATSH-ED 24	2.51 (*1.67*)	2.95 (*1.77*)	.11 (-.01, .23)

BATSH-ED 27	2.85 (*1.65*)	2.26 (*1.34*)	-.18 (-.30, -.06)
BATSH-ED 29	4.55 (*1.37*)	4.52 (*1.55*)	-.01 (-.13, .11)
BATSH-ED 34	2.51 (*1.58*)	2.79 (*1.71*)	.07 (-.05, .19)
BATSH-ED 36	3.07 (*1.71*)	3.39 (*1.97*)	.07 (-.05, .19)
BATSH-ED 39	3.99 (*1.75*)	4.46 (*1.50*)	.13 (.01, .25)
BATSH-ED 40	2.93 (*1.74*)	2.59 (*1.57*)	-.09 (-.21, .03)
BATSH Denial	3.07 (*.91*)	3.51 (*.77*)	-.23 (-.34, -.11)
BATSH Ambivalence	3.25 (*.82*)	3.04 (*.72*)	.12 (.01, .24)

Notes. Tx = treatment; r = correlation coefficient; CI = confidence interval; PBPT = Perceived Barriers to Psychological Treatment Scale; BATSH-ED = Barriers Towards Seeking Help for Eating Disorders; Bolded subscales and items represent significant group differences between treatment seekers and non-treatment seekers based on correlation coefficients > .10.

Table 6.4

Confirmatory Factor Analyses: Model Fit Indices and Internal Consistency Comparisons

Model	1	2	3	4
Description	Original 8-factor PBPT Model	Model 1 with addition of denial and ambivalence	Model 2 only retaining significant subscales	Removal of weak items from Model 3
Items	28	34	18	15
Model fit indices				
RMSEA	.07	.06	.07	.06
CFI	.92	.91	.92	.95
TLI	.91	.89	.89	.93
AIC	28562.736	36720.234	22458.090	18158.884
BIC	28991.475	37293.260	22741.542	18406.234
χ^2 (*df*)	639.615 (*220*) *	920.670 (*356*) *	354.013 (*120*) *	202.736 (*75*) *
	Internal Consistency: Omega Total (item-total range)			
Subscales				
PBPT Stigma#	.84 (.51., .74)			
PBPT Lack of Motivation	.88 (.78., .78)			
PBPT Emotional Concerns#	.86 (.73., .79)			
PBPT Negative Evaluations of Therapy	.77 (.56., .72)			
PBPT Misfit of Therapy to Needs#	.67 (.44., .63)			
PBPT Time Constraints	.72 (.56., .56)			
PBPT Participation Restriction	.81 (.34., .69)			.86 (.71., .74)
PBPT Availability of Services#	.61 (.44., .44)			
BATSH-ED Denial		.69 (.20., .56)		.80 (.66., .66)
BATSH-ED Ambivalence		.45 (.18., .33)		.48 (.32., .32)

Note. RMSEA = root-mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; AIC = Akaike's Information Criteria; BIC = Bayesian Information Criteria; χ2 = Chi-square; df = degrees of freedom; BATSH-ED= Barriers towards seeking help for eating disorders; PBPT = Perceived Barriers to Psychological Treatment Scale. Omega totals provided once for each subscale. Subscales which had weak items removed omega totals were updated. *Significant at p <.01. #Denotes subscales removed in model 3

Invariance Testing

Invariance testing was conducted by ED risk group (**Table 6.5**). Close inspection of the data revealed PBPT item 9 (fatigue and physical symptoms) to be problematic between ED risk groups, as participants in the low ED risk group did not select option 5 on the Likert scale (rated as “impossible) for this barrier, whereas in the high-risk group only three participants rated item 9 “impossible.” To mitigate this issue, responses originally rated as a 5 on the Likert scale of PBPT and BATSH items were transformed to reflect 4 on the Likert scale for the purposes of ED group invariance testing. Invariance testing of Model 4 showed the fit of the configural models to be acceptable (*RMSEA* = .06; *CFI* = .98; *TLI* = .97). Analyses revealed metric non-invariance, that is, factor loadings could not be constrained to be equal across low and high ED risk groups. Therefore, testing of the full invariance model (fixing both factor loadings and item thresholds) was discontinued.

Table 5

Invariance Testing for Model Fit Results Between ED Risk Group

Model	No. of parameters	Chi-square (*df*)	Models compared	Chi-square (*df*)
Configural	150	265.238 (150) *		
Metric	141	289.161 (159) *	Metric vs. Configural	27.41 (9) *

Note. *$p < .01$; *df* = degrees of freedom.

Convergent and Divergent Validity

Table 6.6 shows moderate to strong significant positive correlationsbetween the four PBPT subscales for the high ED risk group. Higher levels of denial were associated with lower levels of Lack of Motivation and higher levels of Ambivalence; higher levels of denial were associated with lower levels of depression and eating disorder psychopathology. On the other hand, the Ambivalence subscale displayed moderate correlations with all four PBPT subscales. All relationships between barriers factors and attitudes to help-seeking were in the expected direction, with the strongest relationships being found with Negative Evaluations of Therapy and Ambivalence.

Table 6.6

Pearson Correlations between Model 4 subscales and Outcome Variables for high ED risk group (n = 261)

5	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lack of Motivation													
2. Negative Evaluations of Therapy	.50*												
3. Time Constraints	.33*	.33*											
4. Participation Restriction	.24*	.26*	.21*										
5. Denial	-.13*	-.06	.01	.02									
6. Ambivalence	.35*	.40*	.13*	.13*	-.16*								
7. DASS-D	.51*	.44*	.25*	.13*	-.23*	.39*							
8. DASS-A	.35*	.29*	.22*	.21*	-.17*	.26*	.55*						
9. DASS-S	.39*	.31*	.33*	.18*	-.16*	.24*	.60*	.74*					
10. EDEQ Global	.30*	.31*	.12	.13*	-.25*	.35*	.43*	.34*	.39*				
11. ATSPPH	-.17*	-.31*	-.15*	-.04	-.18*	-.25*	-.17*	.01	-.01	-.01			
12. BMI	.07	.10	-.13*	.04	-.07	-.02	.09	.06	.01	.18*	.16*		
13. SES	-.10	-.10	-.05	-.02	-.04	-.14*	-.16*	-.04	-.09	-.04	.11	-.01	

Notes. ED = Eating disorder; DASS-D = Depression and Anxiety Scales – Depression; DASS-A = Depression and Anxiety Scales – Anxiety; DASS-S = Depression and Anxiety Scales – Stress; EDEQ = Eating Disorder Examination Questionnaire; ATSPPH = Attitudes Towards Seeking Professional Psychological Help; BMI = Body Mass Index; SES = Socio-Economic Status; * $p < .05$.

Multicollinearity

Given the moderate-strong correlations found between barriers to help-seeking factors for the disordered eating group, the presence of multicollinearity was examined using a simultaneous regression analysis, with treatment seeking status as the dependent variable. As recommended by Tabachnick and Fiddell (2012), the condition index (CI) and variance proportions (VP) were examined. Based on these recommendations, a CI > 30 and a VP > 0.50 for at least two different variables is indicative of multicollinearity. In the regression analyses, there were no cases of CI > 30, thus multicollinearity is not indicated.

Concurrent Validity

In the high ED risk group concurrent validity was examined using a logistic regression with treatment seeking status as the categorical dependent variable and BMI, global ED psychopathology, depression, anxiety entered in Step 1, followed by the six barrier factors in Step 2, explaining 22.3% of the variance in treatment seeking status (**Table 6.7**). Global ED psychopathology and denial were the only variables uniquely associated with treatment seeking, where higher levels of disordered eating and lower levels of denial were associated with higher likelihood of treatment seeking.

Table 6.7

Summary of logistic regression analyses for the high ED risk group with treatment seeking status as the categorical dependent variable and the six barrier factors, BMI, ED psychopathology, depression, and anxiety as predictors

Outcome variables	Step	Predictors	Logistic Regression Statistics			
			B	*SE*	Wald	*p*
	1	BMI	.021	.025	.701	.40
		Global EDE-Q	**-.735**	**.175**	**17.58**	**<.001**
		Depression	.197	.249	.626	.43
		Anxiety	-.439	.252	3.04	.08
			χ^2 (4) = 30.03, p < .001. Nagelkerke R^2 = .165			
Tx Seeking Status (*N* = 261)	2	BMI	.023	.027	.701	.40
		Global EDE-Q	**-.711**	**.187**	**14.42**	**<.001**
		Depression	.417	.296	1.99	.16
		Anxiety	-.329	.263	1.56	.21
		Lack of Motivation	.118	.181	.425	.51
		Negative Evaluations of Therapy	-.315	.214	2.16	.14
		Time Constraints	-.188	.169	1.24	.27
		Participation Restriction	-.212	.188	1.27	.26
		Denial	**.407**	**.163**	**6.28**	**.01**
		Ambivalence	.015	.188	.006	.94
			χ^2 (10) = 41.48, p < .001. Nagelkerke R^2 = .223			

Notes. Significant subscales bolded. Tx = Treatment; *B* = unstandardised beta; *SE* = standard error; Wald= Wald test; χ^2 = chi-square; *df* = degrees of freedom; *BMI* = Body mass index; EDE-Q = Eating Disorder Examination – Questionnaire.

Discussion

The main aim of the present study was to further work on a measure of barriers for treatment seeking in people with disordered eating, and in doing so expand on the work of Innes et al. (2018) and Ali et al. (2020) by examining the factor structure of the PBPT (Mohr et al., 2010), and a combination of PBPT and BATSH-ED items (Ali et al., 2020), with respect to treatment seeking for disordered eating. Overall, findings replicated the original 8-factor structure of the PBPT in our sample, with model fit indices for the present study being commensurate to those of the original PBPT validation study. We obtained estimations of internal consistency comparable to the original validation studies (subscales and total score), based on item-total correlations, apart from Misfit of Therapy to Needs and Availability of Services, which had poorer internal consistency in the present study compared to the original PBPT. The addition of six ED related items comprising a Denial and Ambivalence subscale improved model fit from the original PBPT 8-factor structure. Once only significant subscales predicting treatment seeking were retained, with removal of items with weak loadings, a 15-item six-factor solution provided a best fit, the one nearest to an excellent fit. This included four PBPT subscales (Lack of Motivation, Negative Evaluations of Therapy, Participation Restriction, Time Constraints), and two ED related subscales: Denial and Ambivalence. Despite improvements in model fit indices, internal consistency for the Ambivalence subscale remained borderline.

Validity of the refined questionnaire

A second aim of the present study was to investigate the validity of the 15-item questionnaire in our sample with disordered eating who may be expected to be considering seeking treatment. All subscales displayed moderate to strong relationships with each other apart from Denial, which failed to demonstrate relationships with three factors, namely Negative Evaluations of Therapy, Time Constrains and Participation Restriction. A possible explanation for this finding is that Denial subscale is conceptually different from the other three subscales, which measure the belief that interaction with a therapist would be unhelpful or deleterious, the impact of competing activities and the impact of physical and transportation problems associated with attending therapy, respectively (Mohr et al., 2010). The Denial subscale items assess an individual's inability to recognize their own problem or the need for help. In the context of the Psychological Barriers to Treatment (PBPT) questionnaire, participants are asked to rate the impact of each barrier on their ability to attend weekly psychological treatment sessions. If someone does not acknowledge having a problem, they may not endorse any of the barriers measured by the PBPT factors. This lack of endorsement may explain the absence of a relationship among these factors.

The present study established convergent and divergent validity between the developed barriers questionnaire and a range of psychosocial measures, with factors having relationships in the expected directions with all psychosocial measures. All six factors had significant relationships with depression, anxiety and stress, Time Constraints was the only subscale to not have a significant relationship with eating disorder psychopathology. Denial had a significant negative relationship with eating disorder psychopathology, whereby more denial was associated with lower levels of ED psychopathology. This finding is not surprising as one would expect that the more denial of illness endorsed, the lower the psychopathology scores, as also highlighted by the inverse relationships between Denial and measures of depression, anxiety, and stress in our sample. Our finding is supported by previous research by Couturier & Lock (2006), who investigated denial in a sample of 86 adolescents with anorexia nervosa by grouping them into ‘deniers’, ‘minimizers’ and ‘admitters’, finding the ‘deniers’ group to have the lowest global ED psychopathology scores.

In addition, five subscales had expected inverse relationships with attitudes to help-seeking, with the exception being Participation Restriction. However, this finding is not surprising as the Participation Restriction subscale measures items related to physical symptoms and transportation problems related to attending treatment, thus a relationship with one's attitude towards seeking help would not be expected. The associations between our six barrier factors and measures of attitudes to help-seeking and eating disorder psychopathology are supported by previous research (McAndrew et al., 2020), which found a moderate negative relationship between a barrier to help-seeking measure and help-seeking attitudes and a moderate positive relationship between barriers and eating disorder psychopathology. Like our findings, this study also found a lack of relationship between their barriers to help-seeking measure and BMI (McAndrew et al., 2020).

The Denial subscale had the strongest negative relationship with treatment seeking and was the only unique association found with this outcome along with ED psychopathology. The initial recognition of eating behaviours as problematic has been argued to be one of the major triggers for help-seeking for an ED (Hepworth & Paxton, 2007), with self-recognition of an ED leading to greater likelihood of seeking treatment (Fatt et al., 2021). All subscales combined explained a small but significant amount of variance in treatment seeking. Moreover, when further examining external validity by entering measures of ED psychopathology, BMI and mood followed by the six barrier factors, global ED psychopathology was a consistent significant predictor in treatment seeking followed by Denial. In addition, the six factors identified together with psychopathology measures only explained 22% of the variance in treatment seeking, which indicates other factors may play a role in predicting treatment seeking. These may include individual and demographic characteristics such as duration of illness, ethnicity, gender, as well as impairment caused by the ED.

Limitations

A key limitation of the present study was the brief measure of ‘treatment-seeking,’ assessed using a single item. Treatment for ED encompasses a multitude of different providers, such as psychologists, psychiatrists, general practitioners, dieticians, and others, as well as a variety of different settings, such as outpatient services, inpatient services in residential facilities or in hospital settings. The lack of specificity in defining this construct may have not truly measured ‘treatment seeking’ in this population, as the interpretation of what was meant by ‘seeking treatment’ was somewhat left to the participant. Moreover, participants were retrospectively asked whether they had previously sought treatment, with participants who may have currently been in treatment or currently waiting for treatment not being accounted for. Given many studies in the literature have measured treatment seeking/help-seeking by asking similar questions, for example “*Did you ever in your life talk to a medical doctor or other professional about problems with your eating or weight?*” (Forrest et al., 2017) and “*Have you ever seen a health professional about a body image problem?*”, (Fatt et al., 2020), such worded questions fail to clearly define what encompasses an “other professional” and “health professional”, thus leading to the poor definition of treatment seeking as a construct. Future studies should aim to develop standardised measures of treatment/help-seeking in this population or aim to quantitatively assess treatment seeking on a Likert scale, as done by McLean and colleagues (2019), who measured treatment seeking intention on a 5-point Likert Scale (0 = I do not plan to get help; 5 = I am already receiving help), in doing so a more nuanced investigation of treatment seeking and barriers to treatment seeking can be conducted. Future studies may also want to gain a better insight into treatment-seeking as it relates to different stages of change, such as by asking questions relating to the different stages such as: “not seeking treatment”, “contemplating treatment”, “have searched names of therapists in my area”, “saw/currently seeing a therapist”, “have just completed/dropped-out of treatment", which may assist future research in capturing the various levels of treatment engagement.

In addition, the present sample was restricted demographically; only females aged 17-25 were included, and COVID-19 pandemic effects may have changed the nature of barriers to treatment seeking during this time. Little research has been conducted to examine barriers to treatment seeking in male populations and the restricted sample in the current study failed to investigate these gender differences. Further, while our mixed sample was like that used in the work of Innes et al., (2018), our sample had a small percentage of participants who were in a low ED risk group (with 10% seeking previous help for an ED), future research should further validate this questionnaire in a high-risk sample only.

Another limitation of the present study was the inconsistency in Likert scales across the two measures utilised in our CFA. Both the PBPT and BATSH-ED are measured on a 5-point Likert scale, which was adjusted for this study to range from one to five across both measures. However, descriptors in the Likert scales were not consistent, whilst the PBPT ranges from "*Not at All Difficult*" to "*Impossible*", the BATSH-ED ranges from "*Strongly Disagree*" to "*Strongly Agree*". This limitation was apparent when conducting invariance testing, as no participants in the low-risk group rated item 9 of the PBPT as "*Impossible*". This highlights how participants might have been less likely to rate a barrier as "Impossible" in the PBPT but given there were no issues in participants not rating BATSH-ED items as "Strongly Agree", they may have felt more comfortable in rating BATSH-ED barriers in the high end of the Likert scale as opposed to PBPT items, which may have impacted on our findings. Furthermore, the PBPT refers to seeking treatment, while the BATSH-ED refers to seeking help. Future investigations of help-seeking measures should focus on help-seeking, particularly given the difficulties in accessing treatment for EDs post-pandemic (Nuffield Trust, 2022) and the variety of other help available, such as non-government ED helplines, which may encourage a journey to treatment-seeking. The cross-sectional nature of our study does not allow for causal conclusions about the direction of association between barrier factors on outcomes of treatment seeking and psychosocial measures. Investigating the relationship between barriers to help-seeking and treatment seeking behaviour using longitudinal designs examining barriers along the treatment seeking process is warranted.

Lastly, future studies should validate the PBPT and BATSH-ED in separate ED sample, and further test the factor structure supported in the present study as replication across different sample and diagnoses is warranted.

Conclusions

This study addresses a significant gap in the literature by developing a short “barriers to treatment seeking” questionnaire applicable for use with disordered eating populations. By removing subscales not predictive treatment seeking in our sample and including two subscales pertinent to EDs, Denial and Ambivalence, we were able to test a 15-item six-factor solution, which demonstrated good convergent, divergent and concurrent validity with a range of measures of attitudes to help-seeking, global ED psychopathology and mood (depression, anxiety and stress). However, internal consistency for the Ambivalence subscale was borderline, highlighting the need for improvement of this measure. Denial displayed the strongest external validity with treatment seeking status, highlighting the importance of targeting this in prevention and early intervention programs to promote treatment seeking in this population. The development of this short barriers to treatment seeking questionnaire represents a step in the right direction. However, further testing to improve this questionnaire is warranted. Future studies should consider the involvement of individuals with lived experience when further developing this questionnaire, especially with the poorly specific construct of denial of illness.

Chapter 7

Case Series Evaluation of an Early Intervention Program for Eating Disorders in Low Socio-Economic-Status Populations[6]

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[6] The study described in this chapter was published and can be found in **Appendix D**. Marcela Radunz contributed 50%, 70% and 85%, Luke Pritchard contributed 0%, 10%, 0%, Eloisa Steen contributed 0%, 10%, 0%, Paul Williamson contributed 0%, 10% and 0% and Tracey Wade contributed 50%, 0% and 15% to the research design, data collection and analysis and writing and editing, respectively.

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Abstract

This chapter presents a case series evaluation of an early intervention service for eating disorders (EDs) in a primary health care setting across two low socio-economic status (SES) areas in South Australia. Participants in the program (emerge-ED) were recruited from March 2018 to December 2019. Data were collected from 96 participants at baseline, end of treatment 1- and 3-month follow-up. Feasibility, barriers to treatment delivery and change over time in ED symptoms and other clinical outcomes were investigated using Linear Mixed Model analyses. Large within-group effect size decreases were found from baseline to end of treatment across all clinical outcomes. At end of treatment, 83.3% of participants scored below the clinical cut-off for ED psychopathology compared to 15.7% at baseline. Given many people did not complete end of treatment assessments, Multilevel Modelling analyses were conducted to investigate change over time using the sessional ED15 measure (using days since treatment commencement as the measure of time to evaluate trajectories of change in intercepts and slopes) as there were more observations for this assessment. Analyses revealed significant decreases in scores over time, as well as in the rate of change, with presence of purging significantly predicting higher scores at baseline across ED15 outcomes. Our findings suggest low SES populations can achieve similar treatment outcomes to other populations when receiving evidence-based ED treatment and support the further implementation of emerge-ED services across low SES areas.

Introduction

In **Chapter 2**, a literature review summarised the current work of early intervention in the field of eating disorders (EDs), highlighting that the field has been much slower to embrace the concept of early intervention, with much of the literature focusing on prevention and treatment, with very little research investigating early intervention strategies and programs. In 2018, McClelland and colleagues addressed this gap in the literature by describing and evaluating a novel early intervention service for EDs in a tertiary health care setting; The First Episode and Rapid Early Intervention service for Eating Disorders (FREED; McClelland et al., 2018).

The FREED program represents a step in the right direction for early intervention in the field of EDs, encouraging rapid access to early treatment and shorter waiting times. However, to effectively tackle barriers to early intervention, it can be argued that early intervention for EDs also needs to be situated in primary health care settings, and effective with people from low-socio-economic status (SES) backgrounds. While it has been a historical belief that EDs are more prevalent in affluent groups (Bruch, 1973) and that individuals from lower SES are at a higher risk of developing mental health disorders (Reiss, 2013), some evidence challenges this suggestion, with mixed results across the literature. Mitchison and colleagues (2014) examined disordered eating behaviours in a South Australian sample over a 10-year period, finding an increase in objective binge eating, extreme dieting and purging among those earning below the median household income sector from 1998 to 2008. A more recent study of the South Australian population (Mulders-Jones et al., 2017) found that eating disorder behaviours (objective/subjective binge eating, purging, strict dieting and overvaluation of weight/shape) occurred at a similar rate across all levels of SES. Findings from Mitchison and colleagues (2014) are reflected in population studies in Latin America, with Power and colleagues (2008) finding low SES predicts abnormal eating attitudes among a sample of adolescent girls in Ecuador. Similarly, Reagan and Hersch (2005) examined a USA sample, finding that the frequency of binge eating was greater for women who lived in disadvantaged neighbourhoods and had a lower family income. Boisvert and Harrell (2014) had similar findings in a sample of the Canadian population, finding that women from lower SES had higher levels of eating disorder symptomology than women from higher SES.

It has also been suggested that individuals from low SES are less likely to seek help for an eating disorder compared to individuals from high SES. Lipson and Sonneville (2017) found that students from affluent backgrounds had higher odds of perceiving the need for treatment (*OR* = 1.52) and of receiving ED treatment (*OR* = 1.89) compared with their non-affluent peers. Similarly, Forrest et al. (2017) found that adolescent treatment seeking for an ED was most likely associated with higher poverty index ratio and parental education, whereby adolescents with at least one parent with a university degree were almost two times more likely to seek ED treatment compared to adolescents with parents who did not attended university. Given this data, it could be hypothesized that lower SES may lead to poorer treatment outcomes but to date only education and not SES has been examined as a moderator of treatment outcome (Linardon et al., 2017).

Informed by the original model and findings from the FREED study (McClelland et. Al., 2018), an early intervention service for EDs was established in a primary health care setting in which people could self-refer in South Australia in two low SES areas. The Emerge program for Eating Disorders (emerge-ED) aims to provide treatment as early as possible to those experiencing initial symptoms of disordered eating, focusing on the promotion of early help-seeking. The present study provides a case series evaluation of these services, assessing feasibility (completion of treatment), any barriers to treatment delivery, and whether ED and other clinical outcomes in this treatment seeking sample over time were like other populations.

Method

Participants

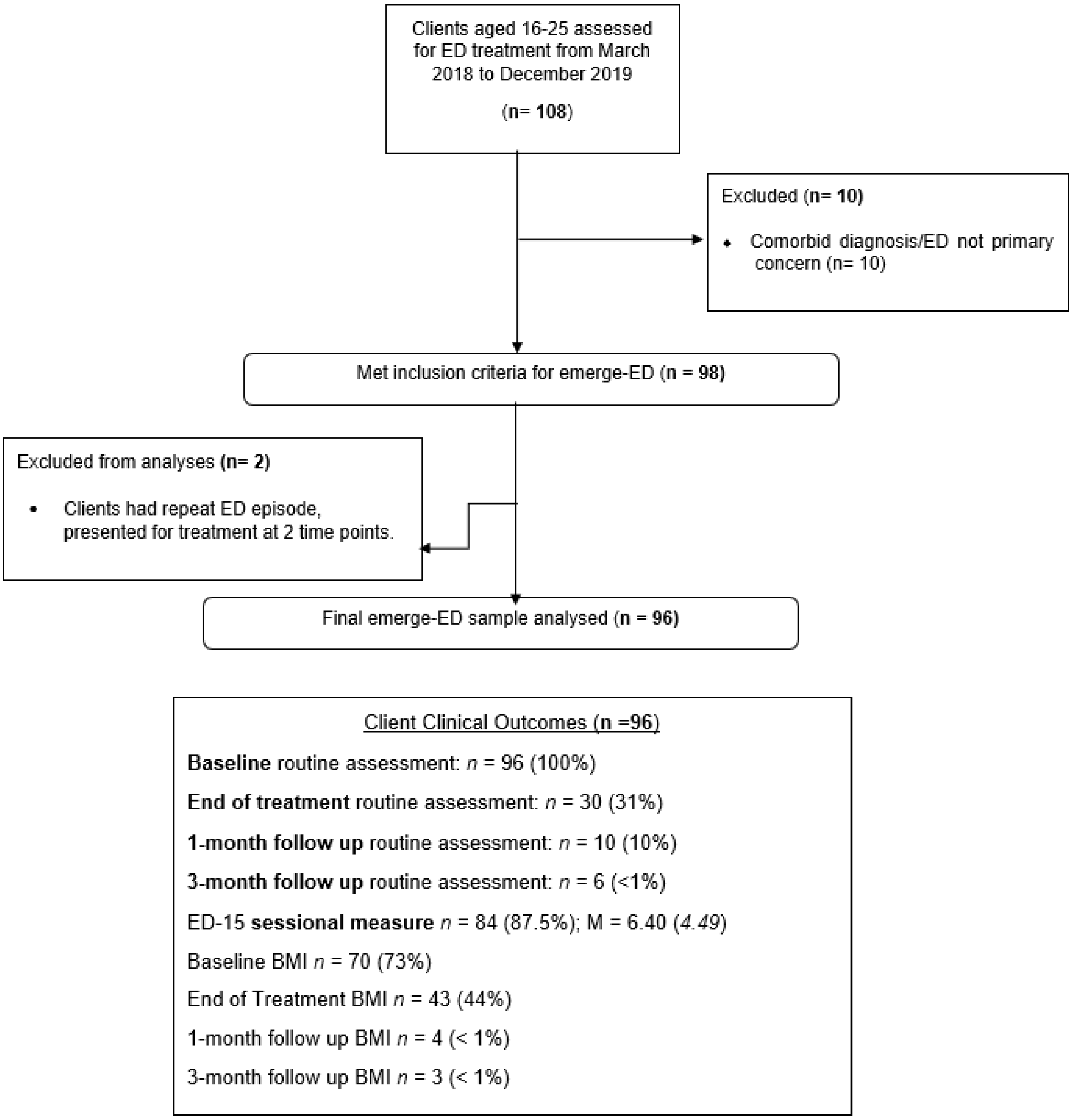
Participants in the present study were recruited from March 2018 to December 2019. Inclusion criteria were being aged 16-25, displaying eating disorder symptoms for no longer than three years and a BMI > 14.5. Participants were either self-referred or referred by their general practitioner (GP) or family member to one of the two headspace clinics, one north and one south of Adelaide, South Australia, currently offering ED specialised treatment. According to a standardised measure of SES, Socioeconomic Indexes for Australia (SEIFA, 2016), both clinics are situated in areas of low SES, with the southern clinic and northern clinic having a score of 914 and 76 respectively, with lower scores representing greater disadvantage. These scores have respective deciles of two and one, indicative of the lowest 20% and 10% of socioeconomic status in Australia. SEIFA (2016) has been created from the five-yearly Census of Population and Housing 2016 data and consists of four indexes: The Index of Relative Socio-Economic Disadvantage (IRSD); The Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD); The Index of Education and Occupation (IEO); The Index of Economic Resources (IER). The IRSD is a general socio-economic index that summarises a range of information about the economic and social conditions of people and households within an area (e.g., income, qualifications, occupation). The IRSAD summarises information about the economic and social conditions of people and households within an area. The IER focuses on the financial aspects of relative socio-economic advantage and disadvantage, by summarising variables related to income and wealth and excludes education and occupation variables because they are not direct measures of economic resources. The IEO is designed to reflect the educational and occupational level of communities.

Participant Flow

Figure 7.1 shows the flow of participants throughout the study. A total of 10 participants were referred on from emerge-ED services to more appropriate services for their primary diagnosis. In addition, two (2%) participants in the sample had repeat episodes of ED and completed questionnaire assessments at both visits. Data from their second episode were excluded, thus resulting in a final sample of 96 participants.

Figure 7.1

Participant Flow Diagram and Data Collection for Client Clinical Outcomes



Client Clinical Outcomes (n =96)

Baseline routine assessment: $n = 96$ (100%)

End of treatment routine assessment: $n = 30$ (31%)

1-month follow up routine assessment: $n = 10$ (10%)

3-month follow up routine assessment: $n = 6$ (<1%)

ED-15 **sessional measure** $n = 84$ (87.5%); M = 6.40 (*4.49*)

Baseline BMI $n = 70$ (73%)

End of Treatment BMI $n = 43$ (44%)

1-month follow up BMI $n = 4$ (< 1%)

3-month follow up BMI $n = 3$ (< 1%)

As highlighted in **Figure 7.1**, there were low completion rates for client clinical outcomes, particularly for the routine assessment measures at end of treatment and the two follow-up time points. However, the use of a sessional measure throughout treatment yielded a higher response rate and greater number of observations.

Intervention

In Australia, each state has substantial free, government-run ED services. All citizens and residents have Medicare, which additionally grants them access to up to 40 subsidized sessions with a private practitioner (e.g., psychologist, psychiatrist). In 2006, the Australian Federal government established a primary mental health care service, headspace, to better meet the needs of young people struggling with mental illnesses. In 2021, headspace, has over one-hundred centres across Australia that act as a one-stop-shop for young people who need mental health services for mild to moderate symptoms/distress that would meet criteria for a diagnosis. Headspace is a not-for-profit organisation providing free mental health services to all young Australians aged 16-25, thus clients can self-refer to one of the centres without needing a Mental Health Care Plan from a GP.

To meet the needs of severe/complex mental illness the “emerge” services were introduced in 2018. Two clinical psychologists with expertise in ED treatment were employed to provide early intervention services for EDs in “emerge”, which we will hereafter refer to as emerge-ED. These services were modelled closely on FREED (McClelland et al., 2018) with a focus on rapid engagement with young people and their families and social supports. Assessment appointments are typically provided within three weeks. The program presents an optimistic outlook and focus on early full recovery, with emphasis placed on psychoeducation and nutritional management throughout treatment. Emerge-ED places a focus on tailoring treatment to need, with cognitive behavioural therapy (CBT) as the main treatment being offered. To best match treatment to needs, clients with a BMI > 18.5

typically received Cognitive Behaviour Therapy-Ten a 10-session cognitive behaviour therapy (CBT-T; Waller et al., 2019), whereas clients with a BMI < 18.5, or who did not respond to the ten-session treatment, typically received enhanced CBT (CBT-E; Fairburn et al., 2003). In addition, clients presenting with disordered eating as an issue secondary to another diagnosis received psychoeducation with a focus on prevention, typically lasting five sessions.

Design

The study design is a case series (no comparison group), where self-report assessments were conducted at baseline, end of treatment and 1- and 3-month follow-up. A self-report measure of disordered eating and cognitions was also administered on a session-by-session basis.

Procedure

All referrals were screened by the ED clinicians or a general staff member in consultation with the ED specialist. Clients who met inclusion criteria for emerge-ED were invited to attend a comprehensive assessment conducted by the ED clinicians, whereby treatment options were discussed with clients. The main interventions offered included cognitive behavioural therapy and/or psychoeducation. Clients with a BMI > 18.5 typically received CBT-T (Waller et al., 2019), whereas clients with a BMI < 18.5, or who do not respond to a ten-session treatment typically received CBT-E (Fairburn et al., 2003). In addition, clients presenting with minor eating issues, or clients where eating is not the primary issue received psychoeducation with a focus on prevention, typically lasting five sessions.

Once treatment commenced, clients were invited to participate in the ongoing evaluation of emerge-ED. Routine collection of data assessment for quality assurance purposes was approved by the *Southern Adelaide Clinical Research Ethics Committee* (protocol number 284.14). Participants completed assessment questionnaires at baseline, end of treatment, one- and three-month follow-up, as well as a sessional measure of eating disorder symptoms.

Measures

Eating disorder cognitions and behaviours

Two measures were used. First, the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008) was used to assess global eating disorder symptomology. Second, the ED-15 (Tatham et al., 2015) was administered to participants on a session-by session basis. In the present study, Cronbach's alpha of the global EDE-Q subscale was .93 and for the ED-15 cognitions .96.

Negative affect

The Depression Anxiety and Stress Scales (DASS-21; Lovibond & Lovibond, 1995) described in **Chapter 5** had. Cronbach's alphas in the present study for depression, anxiety and stress were .87, .89 and .84 respectively.

Clinical impairment associated with eating

Psychosocial impairment due to ED symptomology was assessed using the 16-item Clinical Impairment Assessment (CIA; Bohn et al., 2008), described in **Chapter 5**. Cronbach's alpha for the present study was .92.

Weight and body mass index (BMI)

Clients' weight and height were used to calculate BMI scores. These values were taken from clinicians' notes at each assessment time point, where clients were weighed in session.

Statistical Analyses

Linear Mixed Model (LMM) analyses were performed to evaluate within group changes in clinical outcomes (except for the ED-15) over the course of treatment. LMM analyses are robust in handling missing data and unbalanced designs in repeated-measures research (Nich & Carroll, 1997), offering the benefits of estimation maximization (EM), which provides joint linear modelling for each individual for observed *and* missing data based on maximizing likelihood for population parameters as a function of observed data (Norusis, 2007). Thus, *all* participants (regardless of missing data at one or more assessment time points) are included in the data analyses and linear estimates are obtained, as opposed to missing cases being omitted as is the case with traditional ANOVA techniques (Gueorguieva & Krystal, 2004). An assumption is that data are missing at random. Time was entered as a fixed effect. Within group effect sizes and confidence intervals were calculated using baseline and end of treatment correlations and their respective means and standard deviations (Lenhard & Lenhard, 2016). The moderation analyses were performed to investigate whether specific pre-treatment variables impacted within group changes in clinical outcomes over time. Potential moderators were investigated using LMM and included: presence of objective binge episodes, purging (combined vomiting and laxatives), weight status (BMI: underweight, healthy weight and overweight), participant age (<18 or > 18) and clinic location.

We also analysed ED-15 scores, given this offered more power with a greater number of observations over time. Multilevel modelling was undertaken using the ‘multilevel package’ of the statistical software *R*, using time in days since treatment commencement as the measure of time to evaluate changes. Multi-level modelling was required because this session-by-session measure was not completed by participants at the same time points. This analysis is particularly useful when the length of time “in treatment” varies across participants and when the timing of assessment is not consistent across participants. We used a multi-level growth model where change over time for individuals can be estimated (i.e., trajectories of change) using a Level-1 model, whereby Level-2 variables (non-changing characteristics of patients) can be added to the model to predict differences in the intercepts and slopes. In this case, the intercept reflected scores at treatment commencement (between person variation) and the slopes represented the change within-person or change in trajectories. Multilevel modelling was conducted for the combined ten items of the ED-15 that relate to eating disorder cognitions, as well as for each of the five behavioural items.

For each outcome variable, we used a multistep process. In Step 1, a null model was fitted and the intraclass correlation coefficient (ICC) was calculated to estimate the relative amount of variance in the outcome that was associated with intercepts and slopes At Step 2, the fixed linear relationship between time and the dependent variable was examined. This is the average change trajectory and assumes that any variation in slopes between individuals is just random error. At Step 3, a random slope model was examined to test for evidence that the slopes vary across individuals. At Step 4, the error structure of the model was examined by testing whether an autoregressive structure improved the model fit (Bliese, 2013).

Results

Description of participants

The final sample had a mean age of 19.3 years (*SD* = 2.39) and 92% identified as female; the sample was predominantly Caucasian/white. Baseline means and standard deviations are shown in **Table 7.1**: 50.7% of participants were within a healthy BMI range, 22.5% were classified as underweight (i.e., BMI < 18.5); 26.8% were classified as overweight (i.e., BMI > 24.9). Twenty participants received psychoeducation, 15 received CBT-T and 48 received CBT-E, data was missing for 13 participants. Out of 96 participants, 76 completed a measure of their disordered eating behaviours, with 72.4% reporting engagement in some form of disordered eating behaviour. This included: binge eating (44.7%), driven exercise (43.4%), self-induced vomiting (21.1%), and laxative misuse

(5.3%). Most participants (84.2%) received an EDE-Q Global score above the clinical cut-off (i.e., >=2.77; Mond et al., 2006a).

Table 7.1

Descriptive statistics (means and standard deviations) for all variables across treatment time points.

Variables	**Baseline (N = 96) Mean (*SD*)**	**End of Treatment (N = 30) Mean (*SD*)**	**1-Month Follow Up (N = 10) Mean (*SD*)**	**3-Month Follow Up (N = 6) Mean (*SD*)**
Global eating psychopathology	4.09 (*1.24*)	1.87 (*1.26*)	2.19 (*1.06*)	3.11 (*1.34*)
Depression	2.00 (*.67*)	.82 (*.73*)	1.09 (*.69*)	1.41 (*.87*)
Anxiety	1.70 (*.72*)	.90 (*.70*)	.98 (*.43*)	1.18 (*.57*)
Stress	2.01 (*.57*)	1.18 (*.58*)	1.44 (*.68*)	1.60 (*.87*)
Psychosocial impairment	33.65 (*8.84*)	14.53 (*10.30*)	12.44 (*6.11*)	20.20 (*10.83*)
Body Mass Index (BMI)	22.66 (*5.88*)	23.16 (*5.37*)	24.63 (*2.65*)	25.54 (*1.92*)

Missing data

As shown in **Figure 7.**1, of the 96 participants, 30 participants (31%) completed end of treatment questionnaire measures and 43 (44%) completed BMI measurements. At 1-month follow up, only 10 (10.4%) participants completed questionnaire measures, and 4 (< 1 %) completed BMI measures, with measures at 3-month follow-up having less than 1% response rate. In the context of our study, missing data in our sample encompasses participants who, despite attending sessions, did not complete the sessional and routine assessment measures, as well as those who discontinued attending sessions and as a result were unable to complete the measures. To investigate whether data were missing at random, logistic regression analyses were conducted to identify baseline predictors of missingness for participants missing more than two data time points and those missing less than two data time points. Logistic regression analyses revealed baseline variables did not significantly predict missingness (**Table 7.2**). Due to a large amount of missing data, however, at the follow-up points, we elected to only include baseline and end of treatment data in our analyses to investigate change over time, as well as the session-by-session measures between these two time points.

Table 7.2

Logistic Regression Analyses: Baseline Variables as Predictor of Missingness

Baseline Variables	**Odds Ratio (95% CI)** ***p***
Global eating psychopathology	.80 (.48, 1.35) *.41*
Depression	.83 (.31, 2.24) *.72*
Anxiety	.94 (.35, 2.53) *.90*
Stress	2.41 (.63, 9.28) *.20*
Psychosocial impairment	.97 (.90, 1.05) *.48*
Body Mass Index (BMI)	.99 (.91, 1.08) *.79*

Note. CI = Confidence Interval.

Completion of treatment

The number of sessions completed by participants was used as an indicator of treatment completion, with these numbers being available for participants who attended sessions in the northern clinic. Out of the 96 participants in the emerge-ED sample, 41 attended sessions in the northern clinic. The mean number of sessions completed was 18.32 sessions (*SD* = 14.19, min = 2, max = 75). The mean number of sessions for those receiving psychoeducation was 4.40 sessions (*SD* = 1.47), 8.60 sessions (*SD* = 4.20) for those receiving CBT-T and 18.43 sessions (*SD* = 13.24) for those receiving CBT-E.

Barriers to treatment delivery

It was noted by both clinicians working in each of the clinics, that several barriers to treatment delivery were present across the emerge-ED sample, resulting in the clinicians often having to deviate from standard treatment protocols. A vast majority of clients did not have a support network, preventing clinicians from involving parents and carers into the therapy process. In addition, many of the treatment delivery barriers related to availability of food, food preparation knowledge and skills, as well as a lack of general nutrition knowledge, with many clients being overly reliant on fast-food options. Clients were also faced with difficulties in getting to appointments due to transportation issues, as well as appointment times coinciding with school hours. It was also noted by clinicians that many clients required extensive risk management, which resulted in non-ED focussed sessions. Lastly, some clients were observed to stop working towards full recovery once their quality of life was improved.

Change over time for completers

Significant main effects for time were found across all treatment outcome measures (**Table 7.3**), except for BMI of the participants who met the criteria for overweight. There were large within-group effect size decreases in global eating disorder psychopathology, psychosocial impairment, and negative affect from baseline to end of treatment. Separate analyses were conducted for those who were categorised as underweight, healthy weight and overweight, with the underweight and healthy weight groups having a significant increase in BMI scores overtime. At end of treatment, 25 out of 30 participants (83.3%) had scores below the clinical cut-off for eating disorder psychopathology compared to 15.7% at baseline.

Table 7.3

Linear Mixed Models Estimated Marginal Means (Standard Errors) for Treatment Outcomes by Time

Variables	**Baseline**	**End of Treatment**	**Main effects, Time F (df), *p***	**Within-group Cohen's *d*, 95% confidence intervals**
Global eating psychopathology	4.09 (*.13*)	1.80 (*.22*)	112.05 (1, 44.82) <*.001*	1.65 (1.32, 1.98)
Depression	2.01 (*.54*)	.85 (*.55*)	104.86 (1, 45.24) <*.001*	1.82 (1.48, 2.16)
Anxiety	1.70 (*.23*)	.94 (.24)	54.00 (1, 35.29) <*.001*	1.25 (.94, 1.56)
Stress	2.01 (*.06*)	1.21 (*.10*)	60.71 (1, 48.64) <*.001*	1.22 (.91, 1.52)
Psychosocial impairment	33.65 (*.94*)	13.92 (*1.59*)	142.54 (1, 50.83) <.001	1.97 (1.63, 2.32)
Underweight (BMI < 18.5)	16.92 (*.79*)	18.01 (*.93*)	6.92 (1, 39.58) *.012*	1.50 (.72, 2.29)
Healthy Weight (BMI > 18.5 – 24.9)	21.15 (*.53*)	22.20 (*.62*)	14.49 (1, 40.05) <*.001*	1.15 (.65, 1.65)
Overweight (BMI > 25)	30.29 (*.72*)	30.83 (*.86*)	1.74 (1, 39.61) *.195*	.11 (-.53, .74)

Moderation Analyses

Two significant interactions between clinic location and time were found, for both psychosocial impairment and global eating disorder psychopathology. In both cases, clients at the northern clinic (the most socially disadvantaged) had a steeper decrease in psychopathology given a higher baseline score, with a similar end of treatment score to the southern clinic. **Table 7.4** summarises the results of moderator analyses for all treatment outcome variables. A significant interaction between purge status and time on depression scores was found (**Figure 7.2**), with participants who reported not engaging in purging behaviours having a greater decrease in depression scores over time compared to those who reported engaging in purging behaviours, and at the end of treatment had significantly lower depression scores (ES = .60, 95% CI [.08, 1.12]).

Figure 7.2

Depression Scores by Purging Status Across Study Time Points

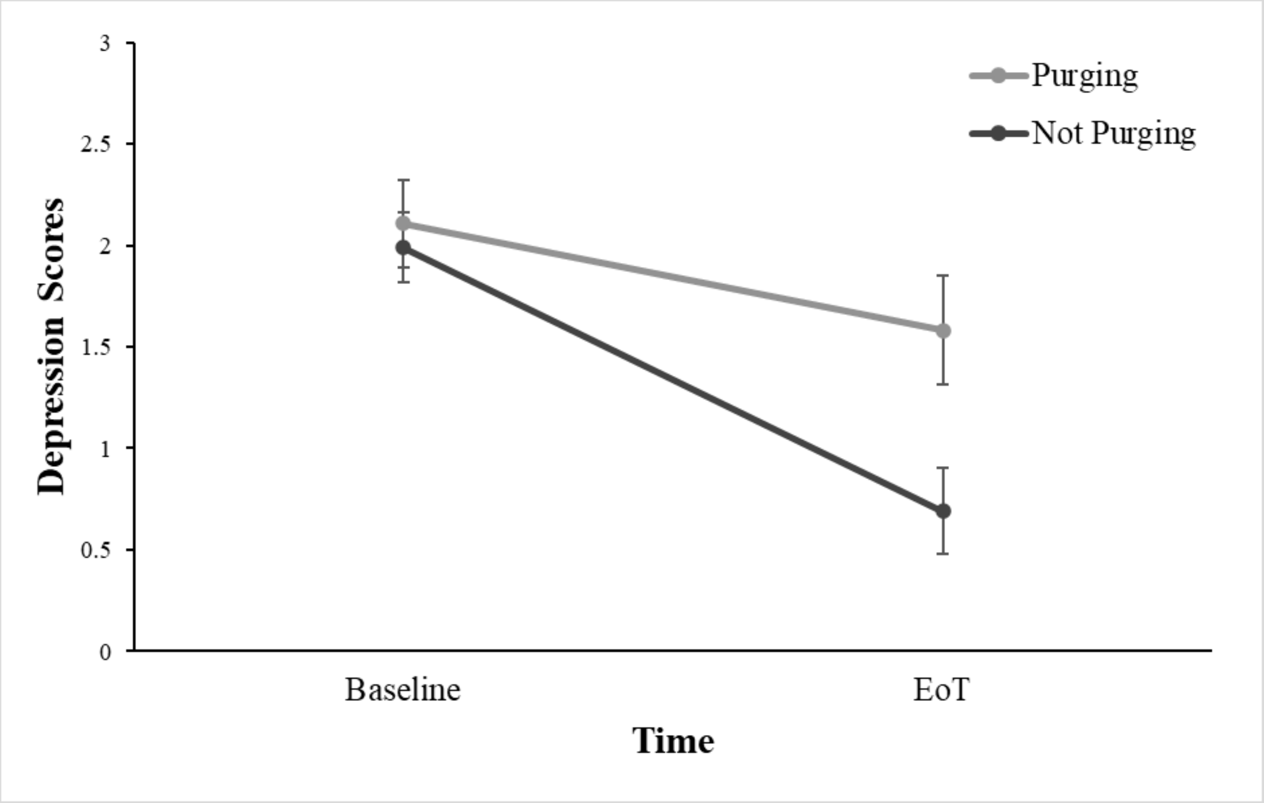


Table 7.4

Main Effects for Moderator Analyses for All Treatment Outcome Variables

	Main effects, *F* (df), *p*		Interaction, *F* (df), *p*
Outcome Variable	Time	Group	Time*Group
	Binge Status		
Global Eating Psychopathology	64.91 (1, 34.10), <*.001**	1.06 (1, 87.83), *.31*	.13 (1, 34.10), *.73*
Depression	67.92 (1, 31.81), <*.001**	1.32 (1, 91.01*), .25*	3.54 (1, 31.81), *.07*
Anxiety	32.34 (1, 23.89), <*.001**	.86 (1, 90.17), *.36*	1.57 (1, 23.89), *.22*
Stress	40.71 (1, 29.69), <*.001**	.01 (1, 89.13), *.94*	.01 (1, 29.69), *.93*
Psychosocial Impairment	88.51 (1, 35.15), <*.001**	2.92 (1, 88.36), *.09*	.35 (1, 35.15), *.56*
Body Mass Index			
	Purge Status		
Global Eating Psychopathology	58.36 (1, 31.88), <*.001**	19.54 (1, 84.97), <*.001**	3.31 (1, 31.88), *.08*
Depression	50.93 (1, 28.53), <*.001**	7.09 (1, 88.48), *.01**	9.19 (1, 28.53), *.01**
Anxiety	25.13 (1, 23.38), <*.001**	5.67 (1, 87.21*), .02**	3.32 (1, 23.38), *.08*
Stress	34.74 (1, 28.10), <*.001**	2.39 (1, 86.40), *.13*	.38 (1, 28.10), *.54*
Psychosocial Impairment	74.50 (1, 32.54), <*.001**	17.10 (1, 83.47), <*.001**	3.37 (1, 32.54), *.08*
Body Mass Index	11.60 (1, 30.16), <*.001**	5.33 (1, 54.98), *.03**	1.27 (1, 30.16), *.27*
	Weight Status		
Global Eating Psychopathology	66.55 (1, 34.14*), <.001**	1.38 (2, 78.82*), .26*	1.92 (2, 33.52), *.16*
Depression	67.43 (1, 37.88), <*.001**	.03 (2, 80.85), *.97*	.42 (2, 37.40), *.66*
Anxiety	32.57 (1, 29.62), <*.001**	.77 (2, 79.90), *.47*	.22 (2, 29.37), *.80*
Stress	38.65 (1, 32.93), <*.001**	.18 (2, 77.85), *.84*	.17 (2, 32.59), *.85*
Psychosocial Impairment	96.50 (1, 40.61), <*.001**	.35 (2, 80.08), *.71*	.67 (2, 39.87), *.52*
Body Mass Index	16.52 (1, 40.18*), <.001**	77.37 (2, 69.10), <*.001**	.85 (2, 40.19), *.43*
	Minor Age		
Global Eating Psychopathology	49.84 (1, 49.98), <*.001**	.38 (1, 116.95*), .54*	.09 (1, 49.98*), .75*
Depression	37.64 (1, 37.39), <*.001**	2.22 (1, 114.756) *.14*	3.60 (1, 37.79) *.07*
Anxiety	15.68 (1, 34.45), <*.001**	.20 (1, 115.364) *.66*	2.61 (1, 34.45) *.12*
Stress	21.75 (1, 48.46), <*.001**	.02 (1, 115.43) *.89*	2.05 (1, 48.46) *.16*
Psychosocial Impairment	70.81 (1, 50.20), <*.001**	1.21 (1, 115.71) *.27*	.12 (1, 50.20) *.73*
Body Mass Index	10.65 (1, 39.38), <*.001**	4.99 (1, 68.87), *.02*	1.94 (1, 39.38), *.17*
	Clinic Location		
Global Eating Psychopathology	124.44 (1, 40.57), <*.001**	1.14 (1, 106.90), *.33*	5.26 (1, 40.57), *.03**
Depression	103.81 (1, 42.72), <*.001**	.09 (1, 108.10), *.92*	2.05 (1, 42.72), *.16*
Anxiety	55.41 (1, 34.47), < *.001**	1.45 (1, 104.68), *.24*	1.58 (1, 34.47), *.22*

Table 7.4 Continued

	Clinic Location		
Stress	65.66 (1, 50.46), <*.001**	2.62 (1, 107.57), *.08**	1.24 (1, 50.46), *.27*
Psychosocial Impairment	188.62 (1, 40.15), <*.001**	.55 (1, 107.02), *.58*	12.25 (1, 40.15), < *.001**
Body Mass Index	20.71 (1, 40.29), <.001*	.01 (1, 69.08), *.93*	.69 (1, 40.29), *.41*

Change in sessional ED-15 scores

Trajectories of time

The following ICCs were obtained when the null model was fitted for each ED-15 outcome: cognitions (.67), objective binges (.69), vomiting (.59), laxative abuse (.24), dietary restrictions (.43), driven exercise (.50). For example, 67% of the variance in eating disorder cognition scores can be explained by intercepts (within-person differences) and 33% of the variance was explained by change over time.

As shown in **Table 7.5**, there was a significant decrease in these scores over time (except for laxative use which was of low frequency) where the regression coefficient, b, shows the average change in the outcome per day. The quadratic effects were also significant, illustrated in **Figure 7.3**, suggesting decreases in the rate of change over time. The following effect sizes were obtained for each of the outcome variables: cognitions (d = -.45), objective binges (d = -.26), vomiting (d = -.12), dietary restriction (d = -.27).

The strength of the relationships between time and ED-15 outcome randomly varied among individuals; cognitions, LR = 39.41, p <.001, objective binges, LR = 13.03, p <.001, vomiting, LR = 64.87, p <.001, dietary restriction LR = 5.91, p = .05 and driven exercise, LR = 15.84, p <.001. Moreover, the analysis of the error structure supported the inclusion of an autoregressive structure (autocorrelation) for the models of eating disorder cognitions, restrictive dieting, and driven exercise.

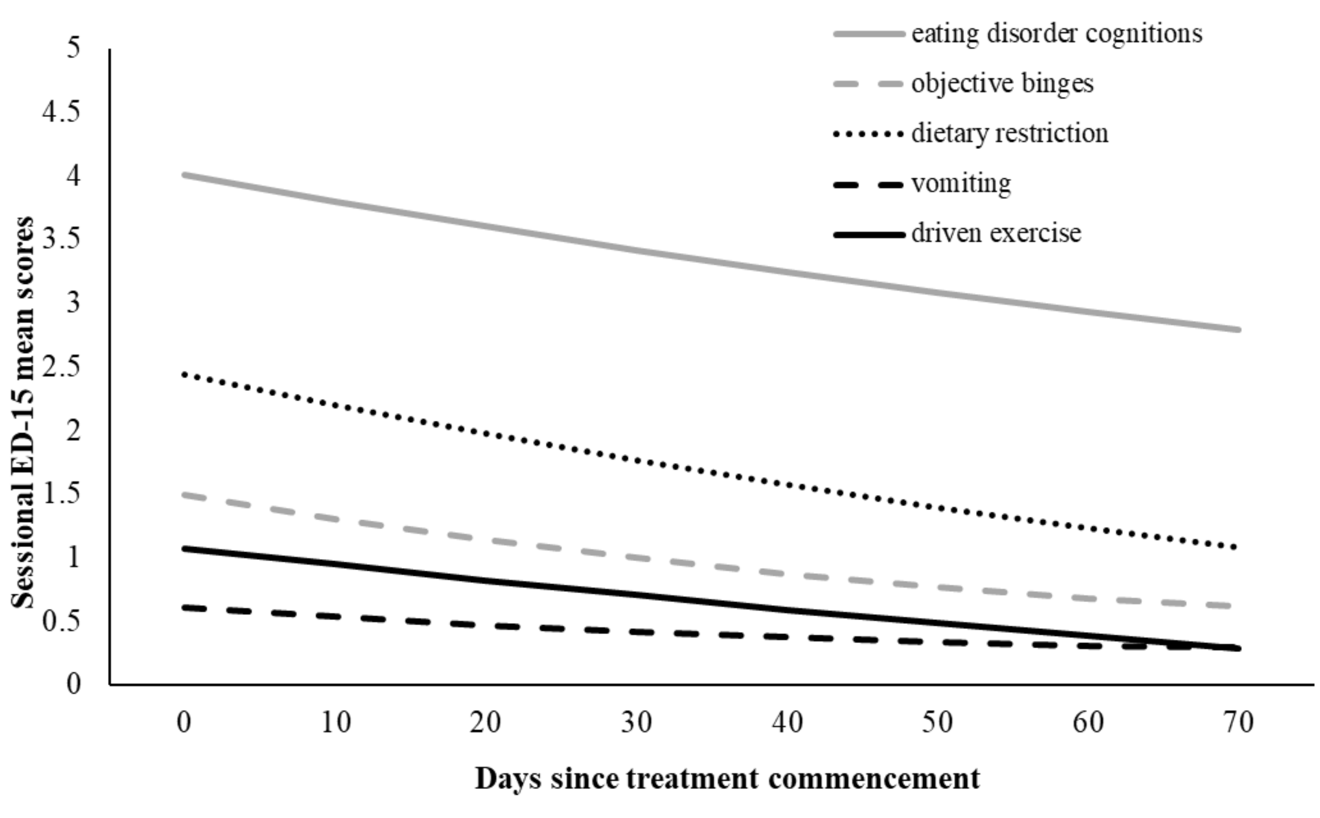
Table 7.5

Level-1 (Time) Model Effects for all ED-15 Outcome Measures

Outcome		*b*	SE_b	*t*	*df*	*p*
ED Cognitions	Linear	-0.022	0.0022	10.00	362	< .001*
	Quadratic	0.00006	0.00001	4.93	362	< .001*
Binge Eating	Linear	-.02	0.0041	-4.66	272	<.001*
	Quadratic	0.00009	0.00003	3.47	272	<.001*
Vomiting	Linear	-0.008	0.0029	-2.66	334	0.008*
	Quadratic	0.00005	0.00002	2.39	334	0.02*
Laxative Use	Linear	.0004	.002	0.18	267	.86
	Quadratic	0.000001	.00001	0.09	267	.92
Restrictive/Dieting	Linear	-0.024	0.0072	-3.36	269	<.001*
	Quadratic	0.00007	0.00005	1.42	269	.01*
Driven Exercise	Linear	-0.013	0.0042	-3.19	267	<.001*
	Quadratic	0.00003	0.00005	1.01	267	.03*

Figure 7.3

Linear and quadratic trends over time for ED-15 outcomes showing significant declines over time (linear effect) with the reduction in the rate of change slowing significantly over time (quadratic component).



Impact of fixed characteristics of participants on intercepts and slopes

Analyses of level-2 variables as predictors of treatment commencement scores revealed significant effects for binge and purge status on eating disorder cognition scores. Specifically, those who engaged in binge eating and/or purging behaviours had significantly higher eating disorder cognition scores compared to those who did not engage in such behaviours; respective estimated mean of 4.40 for those who reported bingeing and 4.08 for those who did not report bingeing ($b = 0.347$, $SE_b = 0.114$, $t(270) = 3.04$, $p = .003$) and 4.63 and 4.17 for those who reported purging ($b = 0.456$, $SE_b = 0.149$, $t(216) = 3.07$, $p = .002$).

However, none of the level-2 variables significantly predicted variability in the linear or quadratic slopes for the time and total eating disorder cognition relationship.

Objective binge episodes at baseline were significantly predicted by centre location and purging status; individuals who attended the southern clinic had higher binge eating frequency compared to individuals who attended the northern clinic, respective estimated means of 1.93 and 0.98 ($b = .91$, $SE_b = 0.378$, $t(64) = 2.40$, $p = 0.02$). Individuals who reported purging had an estimated mean of 2.69 whereas those who did not report purging had an estimated mean of 1.99, $b = .70$, $SE_b = 0..209$, $t(217) = 3.36$, $p <.001$.

Dietary restriction at treatment commencement was significantly predicted by binge and purge status. Individuals who reported bingeing had higher scores compared to those who did not report bingeing with respective estimated means of 3.46 and 2.79 ($b = .68$, $SE_b = 0.272$, $t(264) = 2.48$, $p <.001$). Similarly, those who reported engaging in purging behaviours also had higher scores (estimated mean = 5.57) compared to those who did not report purging (estimated mean = 3.75), $b = .46$, $SE_b = 0.149$, $t(216) = 3.07$, $p <.001$.

Driven exercise at treatment commencement was significantly predicted by purge status, whereby individuals who reported purging had higher frequency of driven exercise compared to those who did not report purging, with respective estimated means of 4.68 and 3.38 ($b = .52$, $SE_b = 0.154$, $t(214) = 3.36$, $p <.001$).

Discussion

The aim of the present study was to provide a case series evaluation of the emerge-ED services by assessing feasibility (treatment completion), barriers to treatment delivery and change over time in clinical outcomes. Our findings revealed participants completed an appropriate number of treatment sessions, even though several barriers to treatment delivery were found, which led clinicians to deviate from treatment protocols. Assessment of change over time in clinical outcomes revealed large within group effect size decreases for all clinical outcome measures from baseline to end of treatment, including the session-by-session measure. These findings are consistent with a pilot evaluation of the FREED services in the UK (McClelland et al., 2018) and comparable to outcomes of CBT-T in non-underweight Australian adults (Pellizzer et al., 2019) and non-underweight UK adults (Waller et al., 2018).

The first aim of the present study was to assess the emerge-ED program's feasibility by evaluating treatment completion. Findings revealed on average 18.32 sessions were completed by participants in the northern clinic, with an average of 18.43 sessions for those receiving CBT-E. Moreover, participants receiving psychoeducation had on average 4.40 sessions, whereas those receiving CBT-T had on average 8.60 sessions. These findings are consistent with the National Institute for Health and Care Excellence guidelines' (NICE; 2017) recommendation of 16-20 sessions of CBT-ED, with CBT-T participants completing on an average 80% of the ten-session CBT-T protocol. Therefore, it can be concluded emerge-ED participants received an appropriate treatment dose. It is also important to note that the number of sessions for the emerge-ED sample is likely to have been higher, as many participants were still receiving treatment at the time of data collection.

The second aim of this study was to assess the barriers to treatment delivery, with many barriers relevant to low SES populations being identified. One of the major barriers to treatment delivery identified was the lack of food availability faced by many emerge-ED clients. This finding has been previously linked to ED behaviours, whereby Hazzard et al. (2020) conducted a review of the emerging evidence on the cross-sectional relationship between food insecurity and EDs, finding food insecurity to be correlated with higher levels of overall ED pathology and specific disordered eating behaviours, including binge eating and compensatory behaviours, which are consistent with the ED behaviours displayed by the emerge-ED sample.

Analyses of change over time across clinical outcomes revealed large decreases in all outcome measures. The percentage of participants with scores below the clinical cut-off (i.e., >=2.77; Mond et al., 2006a) increased from 15.8% at baseline to 83.3% at end of treatment. These findings are comparable to a pilot trial of the FREED services in the UK, who found 70% of the FREED cohort no longer met the global eating psychopathology clinical cut-off 12 months after enrolment (McClelland et al., 2018). Thus, providing support that low SES populations can achieve treatment outcomes comparable to other populations receiving early interventions services. However, our results should be interpreted in the context of large amounts of missing data at end of treatment for the primary outcome measures. For this reason, outcomes for disordered eating were also examined using the ED-15, which offered more reliable results given an average of 4 more data points.

Analyses of change over time in the session-by-session measure revealed significant decreases in the average of scores over time, as well as in the rate of change for eating disorder cognitions, objective binges, vomiting, dietary restriction and driven exercise. When investigating whether pre-treatment variables predicted treatment commencement scores, purge status was found to significantly predict baseline scores across all ED cognitions and behaviours measured by the ED-15. Participants who reported purging had higher eating disorder cognition scores, higher number of objective binge episodes, and higher frequency of dietary restriction and driven exercise. This finding is consistent with previous studies reporting on the association between purging behaviour and greater ED severity (Edler et al., 2007). Similarly, binge status predicted eating disorder cognition and dietary restriction scores at baseline, whereby participants who reported bingeing had higher scores on both outcome measures. This result is unsurprising, as one would expect participants who are bingeing to have higher frequency of dietary restriction following their binges, and such behaviours would result in higher eating disorder cognitions.

Additionally, our study aimed to identify whether pre-treatment variables moderated treatment outcomes overtime, revealing clinic location moderated clinical impairment associated with eating, as well as global eating psychopathology. In both instances, individuals in the most socially disadvantaged clinic displayed higher levels of psychopathology at baseline but similar outcomes at end of treatment. This is consistent with previous studies highlighting the prevalence of EDs in low SES populations (Mitchison et al., 2014; Mulders-Jones et al., 2017), and the link between low SES and higher risk of mental health disorders (Reiss, 2013).

Moderation analyses were also conducted using our baseline and end of treatment measures. These showed that purging behaviour (vomiting and laxative abuse) moderated the effect of depression outcomes over time, whereby individuals who were not purging had a greater decrease in depression levels over time compared to individuals who were purging. An explanation for this finding may be that once individuals stopped their purging early in treatment, they were unable to find a healthy coping mechanism to replace the purging behaviour, which would account for the higher levels of depression found in this group at end of treatment.

Limitations

Many limitations can be noted in the present study, particularly the large amounts of missing data, which precluded our ability to conduct analyses of change over time for the extensive questionnaire battery at follow-up time points. Given this limitation, we were unable to conclude whether low SES populations can achieve comparable treatment outcomes to other populations at follow-up, thus impeding our investigation of whether emerge-ED treatment outcomes are long-lasting. In addition, given that each of the two ED specialists employed in emerge-ED were solely based at one of the two locations, our moderation analyses by centre location were confounded with therapist, thus limiting our conclusions whether SES or therapist characteristics moderated the relationship between time and both psychosocial impairment and global eating disorder psychopathology.

Conclusions

This study is the first to present findings of an early intervention service in a primary health care setting in low SES populations. FREED cohort studies have provided a step in the right direction for early intervention in the ED field, however, their services are available across tertiary health care settings in the UK (Allen et al., 2020), impeding clients to self-refer. Emerge-ED emphasises making access to services as easy as possible, demonstrating the ability of this service to remove barriers to help-seeking, particularly in a population which has a high prevalence of EDs and report more barriers to treatment seeking. The present study also demonstrated that low SES populations can achieve treatment outcomes comparable to other populations, despite the numerous barriers to treatment delivery identified. It has been noted, however, that in this implementation study, sessional measures are a more reliable approach to examining outcome given the non-completion of end of treatment questionnaires by only one-third of participants. Taken together, our findings provide support for the further implementation of emerge-ED services across low SES areas and highlights the need of further exploration of SES within the ED field.

Chapter 8

Addressing the Gap of Early Intervention for Eating Disorders in Primary Health Care

Abstract

In **Chapter 7**, we presented initial findings from emerge-ED, an early intervention program in primary mental health care setting across two locations in South Australia. Given the low rates of help-seeking among individuals with eating disorders (EDs) and many barriers to treatment seeking, placing early intervention models in primary health care settings is one approach to reducing barriers inherent in treatment seeking. The present study aimed to replicate and extend findings from the initial emerge-ED evaluation. In addition to reporting on treatment outcomes in a new cohort of participants, we summarise their views on barriers to treatment seeking. We then examine how this early intervention model in primary health care has evolved over time to overcome the barriers to treatment delivery in a low socioeconomic setting identified by health professionals in the initial evaluation. Eighty participants commenced treatment between July 2020 and March 2022 and completed a mean of 8.98 sessions; 61 (76.25%) completed ≥ 2 sessional measures on ED cognitions and behaviours, but only 31% completed lengthier routine assessments. Findings replicated initial emerge-ED outcomes, with small to moderate effect size decreases in the ED sessional measure at 70 days since treatment commencement for cognitions ($d = .63$) and ED behaviours ($d = -.09.$, $-.69$). The most cited barrier was "*belief that my problem is not bad enough*", reflective of denial of illness. Lastly, to overcome barriers to treatment delivery clinicians had to deviate from treatment protocols, and work together with other healthcare providers (e.g., general practitioners [GPs], psychiatrists, other mental health clinicians) to overcome these barriers. Eligibility criteria was the biggest service-related barrier, with clinicians having to refine criteria to better manage the number of referrals coming through. Overall, our findings highlight the importance of considering primary health care settings as an essential site in delivering early intervention services for EDs

Introduction

In **Chapter 7**, we presented a novel early intervention program for eating disorders (EDs) in a primary healthcare setting, emerge-ED. This program focuses on providing access to services as early as possible by removing barriers to treatment seeking, such as allowing clients to self-refer. The program also focuses on delivering services in areas of low socio-economic-status (SES), which have been shown to experience a high prevalence of EDs and more barriers to treatment seeking (Mulders-Jones et al., 2017).

In our case series evaluation, preliminary findings revealed large within group effect size decreases for global ED psychopathology ($d = 1.65$) and psychosocial impairment caused by eating ($d = 1.97$), and a small to moderate within group effect size decreases from baseline to end of treatment for a sessional measure of ED cognitions and behaviours. However, there were high rates of missing data for routine assessment time points (baseline, end of treatment, 1- and 3-month follow up), with only 31% of the total sample completing end of treatment measures. This suggested the use of sessional measures may be a more reliable approach to evaluating treatment outcomes, as adopted in other implementation settings such as Improving Access to Psychological Therapies (IAPT; Clark et al., 2018). Moreover, many barriers to treatment delivery across the emerge-ED low SES populations were reported by clinicians and included lack of support networks, lack of food availability and transportation, as well as high risk of suicidality.

The present study aims to replicate and extend our understanding of this novel approach to early intervention. First, we replicate the initial findings of emerge-ED by conducting an evaluation of the program with a new cohort of clients over the duration of treatment, as replicability is an important aim in science (National Academies of Sciences, Engineering, and Medicine, 2019). Second, we report on consumers’ views on barriers to treatment-seeking, to assist in further development of an accessible and effective early intervention service in primary mental health care. Third, we investigate how the emerge-ED program has adapted to address the barriers to treatment delivery cited by health professionals in the initial evaluation. Specifically, we explore the changes made to the program to improve its accessibility, acceptability, and feasibility in primary mental health care.

Method

Emerge-ED Model

The emerge-ED model has been described in detail in **Chapter 7**. In brief, it aims to provide evidence-based ED treatment as early as possible by aiming to remove barriers to treatment seeking to provide rapid engagement with services. Emerge-ED is delivered by a severe/complex youth team employed by Sonder (a non-government organisation delivering health and support services to the community), alongside headspace in a primary mental health care setting across two low socio-economic areas in the south and north of Adelaide, South Australia. The program offers cognitive behaviour therapy (CBT) as the main treatment, with clients with a BMI > 18.5 typically receiving Cognitive Behaviour Therapy-Ten, a 10-session CBT treatment (CBT-T; Waller et al., 2019), whereas clients with a BMI < 18.5 typically receiving enhanced CBT (CBT-E; Fairburn et al., 2003). Clients who present to emerge-ED with disordered eating as an issue secondary to a primary diagnosis receive psychoeducation with a focus on prevention, typically lasting five sessions.

Participants

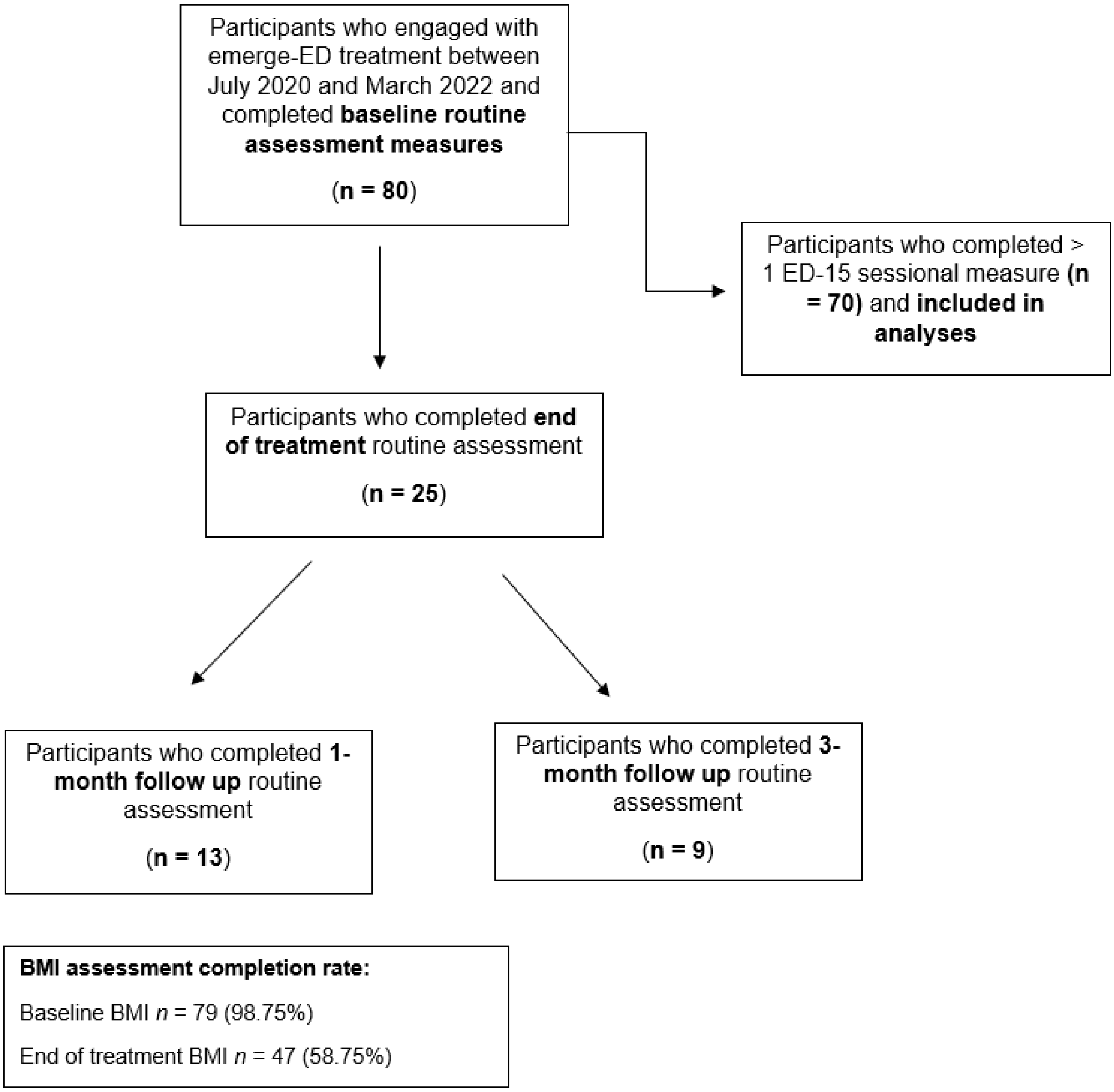
Participants were all clients who were assessed and commenced treatment at emerge-ED between July 2020 through to March 2022. The inclusion criteria for emerge-ED are being aged 16-25, having ED symptoms for no longer than three years and a BMI > 14.5. Participants were able to self-refer or be referred by a family member, their general practitioner or other healthcare professional. Routine collection of data assessment for quality assurance purposes was approved by the *Southern Adelaide Clinical Research Ethics Committee* (protocol number 284.14).

Data Collection

Participants receiving treatment from emerge-ED complete routine assessments for quality assurance purposes at baseline, end of treatment, 1- and 3-month follow-up. In addition, they also complete a sessional measure of ED cognitions and behaviours. **Figure 8.1** shows the data collection throughout the intervention from July 2020 to March 2022. As highlighted in **Figure 8.1**, only 31.25% completing these more extensive pre- and post-treatment assessment, which included the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008).

Figure 8.1

Data Collection Throughout the Intervention: Routine Assessment and Sessional Measure Completion for those Engaged in emerge-ED Services Between July 2020 to March 2022



Design

The current study uses a case series design (no comparison group), with a sessional measure of ED cognitions and behaviours as the primary measure. Secondary outcomes included self-report measures on eating, positive and negative affect, clinical impairment associated with eating and body mass index (BMI) at baseline, end of treatment, 1- and 3-month follow up.

Measures

Primary outcome measure

Sessional changes from days since treatment commencement were measured using the ED-15 (Tatham et al., 2015), a measure consisting of a 10-item ED cognitions subscale and five behavioural items assessing dietary restriction, binge eating frequency, frequency of vomiting, laxative use, and driven exercise. Cronbach's alpha for the 10-item ED cognitions subscale in the present study was .96. In addition to the sessional measure, participants' height and weight were also used to calculate body mass index (BMI) scores at each of the assessment time points.

First treatment experience and barriers to treatment seeking

In addition to the sessional measure, participants in this cohort were also asked at end of treatment: "W*as this the first time you received treatment for eating and/or body image concerns?*" and "*What things prevented you from seeking help for your eating and/or body image concerns?*" to assess first treatment experiences and barriers to treatment seeking. Participants were able to select from ten different barriers: cost of treatment, concerns about being judged or labelled, not expecting counselling to be helpful, beliefs that my problems are not bad enough, difficulties getting time off work/studies, feeling too depressed and/or anxious, not knowing about available treatment/resources, not wanting to lose control over my eating (e.g. putting on weight), belief that I can handle my problems on my own, not wanting others to worry about my problems. Participants were able to select "*yes*" or "*no*" for each barrier to endorse whether each of the listed barriers were a significant barrier to them seeking treatment or not. Barrier items were coded as 1 for "*yes*" responses and 0 for "*no*" responses. Participants were also given the option to provide qualitative responses for other barriers that may have not been listed.

Secondary outcomes are described in detail in **Chapter 5**. In the present study the following Cronbach's alphas were obtained: global eating disorder psychopathology α = .92, depression α = .88, anxiety α = .84, stress α = .76 and psychosocial impairment related to eating α = .91.

Statistical Analyses

The ED-15 (Tatham et al., 2015) ED cognitions and behavioural subscales was evaluated by conducting multilevel modelling (MLM) analyses in the statistical software *R*, using the "*multilevel"* package (Bliese, 2013). Time was calculated using days since treatment commencement. This analysis is particularly useful when the length of time "in treatment" varies across participants and when the timing of assessment is not consistent across participants. MLM allows trajectories of change to be estimated using a Level-1 model regardless of missing data. Nevertheless, given that participants who stop treatment after a relatively short period of time may do so because they are not satisfied with their progress or treatment and would be deemed as drop-outs, analyses were undertaken to look at this issue. Intraclass correlation coefficients (ICC) were calculated at the first step for each outcome variable to estimate the relative amount of variance in the outcome that was associated with intercepts and slopes. We utilised a multistep process, which is explained in detail in **Chapter 7**. For all ED-15 outcomes, an effect size measure based on Cohen's *d* was calculated. Unfortunately, we were unable to calculate 95% confidence intervals around the effect sizes with any degree of certainty. Given that time in treatment varied between all participants, change over time was calculated at time of the median number days in treatment, as the number of days in treatment is likely to be non-normally distributed. The effect sizes for ED-15 outcomes can be interpreted as per Cohen's *d* benchmarks where $d = 0.2$

represents a “small” effect size, *d* = 0.5 represents a “moderate” effect size and *d* = *0.*8 represents a “large” effect size (Lakens, 2013).

Results

Description of Participants

A total of 80 participants completed baseline measures from July 2020 and March 2022, and it is these participants that comprised the final sample of the present evaluation. The final sample had a mean age of 19.02 years (*SD* = 2.19) and was predominantly female and Caucasian/white. Baseline means and standard deviations are shown in **Table 8.1**: 50.6% of the sample were within a healthy BMI, whereas 22.8% were in the underweight range and 26.6% were in the overweight range. Out of the final sample, 91% had a global EDE-Q score above the clinical cut-off (>2.77).

Completion of Treatment

The number of sessions completed by participants was used as an indicator of treatment completion (**Table 8.1**). Out of the 80 participants, 58% (*n* = 46) received treatment in the southern clinic, with 42% (*n* = 34) receiving treatment in the northern clinic. The mean number of sessions attended for the whole sample (*n* = 80) across both locations was 8.98 (*SD* = 8.11). When looking at the number of sessions for those participants who completed end of treatment routine assessments (*n* = 25) the mean number of sessions attended was much greater (M = 15.67; *SD* = 9.21; min = 5.00; max = 38.00). Regarding treatment received, 61.25% of participants received CBT-E, with an average of 14.13 sessions (*SD* = 9.38) completed, whereas 21.25% of participants received CBT-T, with an average of 8.33 sessions completed (*SD* = 4.07). Lastly, 17.5% of participants received psychoeducation, with an average of 4.71 sessions completed (*SD* = 2.29).

Table 8.1

Participant Baseline Demographic Characteristics, Eating Disorder Symptomology at Baseline, as well as Clinic and Session Attendance throughout Data Collection Period

	Based on total baseline routine assessment (*n* = 80)
Demographic characteristics and eating disorder symptoms	
Age (years) mean (*SD*) [range]	19.02 (*2.19*) [16.00, 24.00]
EDE-Q global mean (*SD*)	4.24 (*1.09*)
BMI mean (*SD*) [range]	22.56 (*6.35*) [15.56, 56.24]
Underweight (BMI <18.5)	22.8%
Healthy weight (BMI > 18.5 < 24.99)	50.6%
Overweight (BMI > 25)	26.6%
EDE-Q global score < 2.77	9.0%
EDE-Q global score > 2.77	91.0%
Treatment received at emerge-ED and number of sessions by treatment received	
CBT-T (*n;* M [*SD*])	21.25% (*17;* 8.33 [4.07])
CBT-E (*n;* M [*SD*])	61.25% (*49;* 14.13 [9.38])
Psychoeducation (*n;* M [*SD*])	17.5% (*14;* 4.71 [2.29])
Clinic and session attendance	
Southern clinic	58%
Northern clinic	42%
Number of sessions attended mean (*SD*) [range]	8.98 (*8.11*) [1.00, 38.00]

Missing data

For our sessional measure, 70 participants completed between one to two assessments, with a response rate of 87.5%, with 61 participants completing two or more assessments, with a response rate of 76.25%. For those who completed two or more assessments, the mean number of ED-15 observations was 10.16 assessments (*SD* = 8.03). In the context of our study, missing data in our sample encompasses participants who, despite attending sessions, did not complete the sessional and routine assessment measures, as well as those who discontinued attending sessions and as a result were unable to complete the measures. To investigate whether there were differences in missing data among the two groups, we conducted logistic regression analyses to identify baseline predictors of missingness between participants <2 versus ≥ 2 assessments. Two baseline variables differentiated between the two groups, which included depression and BMI (**Table 8.2**). Those who completed <2 assessments had a significantly lower baseline BMI score M = 21.62, *SD* = 4.25; range 15.56, 33.20) than those who completed ≥ 2 assessment time points (BMI M = 26.54, *SD* = 11.18; range 18.37, 56.24). There were also significant group differences in depression scores between those who completed <2 assessments (M = 1.87, *SD* = .68) and those who completed ≥ 2 assessments (M = 1.48, *SD* = .75).

Table 8.2

Logistic Regression Analyses: Baseline Variables as Predictors of Missingness

Baseline Variables	**Odds Ratio (95% CI)** ***p***
Global eating psychopathology	1.36 (.37., 5.00), *.64*
Depression	.06 (.01., .66), *.02**
Anxiety	2.79 (.34., 22.72), *.34*
Stress	4.40 (.37., 51.85), *.24*
Psychosocial impairment	.95 (.81., 1.12), *.53*
Body Mass Index (BMI)	1.23 (1.02., 1.48), *.03**

Note. * indicates significance at p <.05.

Changes in Sessional ED-15 Scores

As shown in **Table 3**, the ICCs obtained when the null model was fitted for each ED-15 outcome variable varied between .51 (vomiting) to .68 (cognitions). For example, 68% of the variance in ED cognitions scores can be explained by within-person differences (intercepts) and 32% of the variance can be explained by change over time. **Table 8.3** also presents results for ED-15 outcome variables, revealing significant decreases in ED-15 scores across all outcome measures over time, with the regression coefficient *b* showing the average decrease in outcome per day. The quadratic effects were also significant across ED-15 variables and are illustrated in **Figure 8.2,** suggesting decreases also in the rate of change in ED-15 scores (i.e., rate of change slowing as treatment decreases).

Regarding ED-15 effect sizes, **Figure 8.3** illustrates the effect size trends from 30 days since treatment commencement to 247 days since treatment commencement. At 30 days since treatment commencement, the following effect sizes were obtained for each of the ED-15 outcome variables: cognitions (d = -.30), dietary restriction (d = -.32), laxative use (d = -.04), driven exercise (d = -.11), objective binges (d = -.08) and vomiting (d = -.07). At 70 days since treatment commencement the effect size trends were much larger, with greater effect size decreases for ED cognitions (d = -.63), dietary restriction (d = -.70), with also greater effect size decreases for driven exercise (d = -.23), objective binges (d = -.17), with little change for vomiting (d = -.11) and laxative use (d = -.09), which was of low frequency at baseline. It is also important to note that vomiting frequency increases as treatment extends, where from 163 days since treatment commencement to 247 days since treatment commencement there is an increase in effect sizes in the positive direction, with vomiting effect size at 200 days since treatment commencement of (d = .11).

Lastly, based on participants' last ED-15 observation, 44.3% of participants scored above the clinical cut-off for ED psychopathology, as indicated by an ED-15 cut-off score of 2.26 (Rodrigues et al., 2019) compared to 94.3% at first ED-15 observation.

Table 8.3

Model Effects of Time for All ED-15 Outcome Measures

Outcome	ICC		b	SE_b	t	df	p
ED Cognitions	.68	Linear	-.011	0.009	-12.96	555	<.001*
		Quadratic	.0.0002	.00002	8.53	555	<.001*
Binge Eating	.66	Linear	-.009	.002	-5.52	521	<.001*
		Quadratic	-.00002	.00005	4.50	521	<.001*
Vomiting	.51	Linear	-.005	.0013	-3.59	511	<.001*
		Quadratic	.00001	.000004	2.92	511	<.001*
Laxative Use	.63	Linear	-.0025	.0008	-3.28	501	<.001*
		Quadratic	.000006	.000002	2.66	501	.<.001*
Restrictive/Dieting	.54	Linear	-.03	.002	-12.94	488	<.001*
		Quadratic	.00006	.00007	8.81	488	<.001*
Driven Exercise	.63	Linear	-.008	.002	-5.13	498	<.001*
		Quadratic	.00001	.000005	2.88	498	<.001*

Notes. ICC = intraclass correlation coefficient; b = regression coefficient; SE_b = regression coefficient standard error; t = t-value; df = degrees of freedom; p = p-value. * Indicates significance at p <.05.

Figure 8.2

Linear and quadratic trends over time for ED-15 outcomes (n = 70 participants) showing significant mean declines over time (linear effect) with the reduction in the rate of change slowing significantly over time (quadratic component).

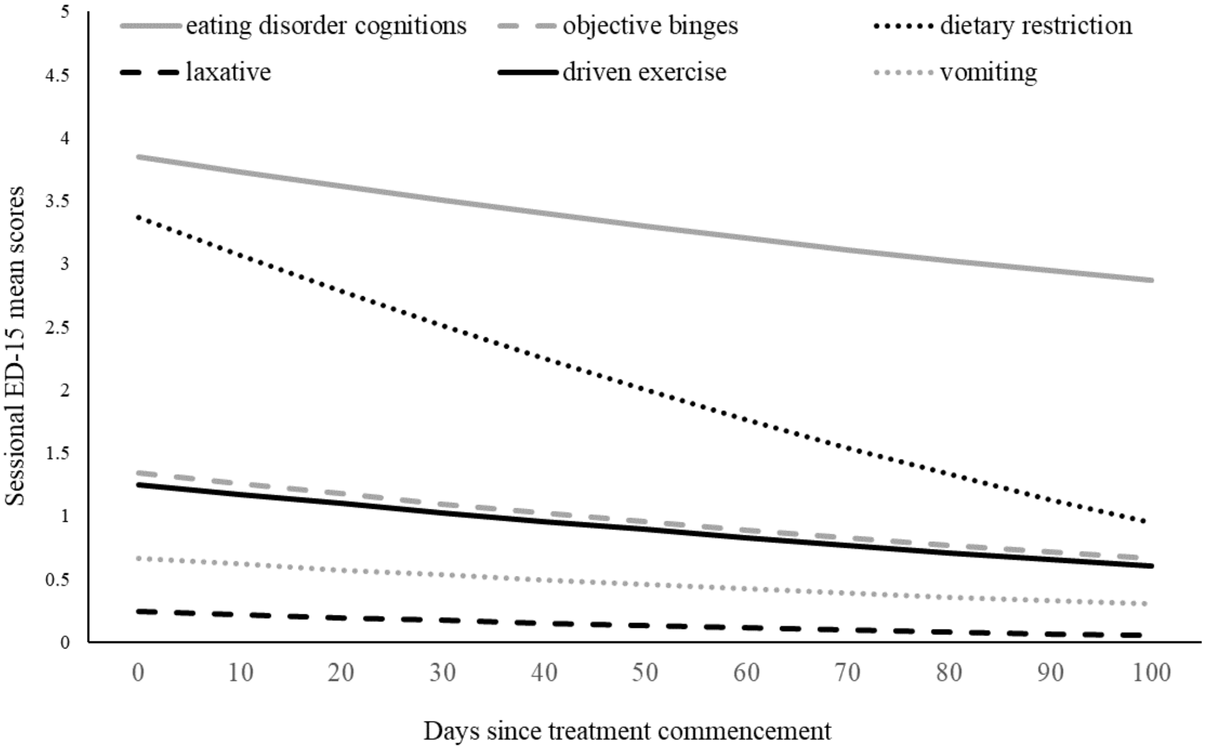
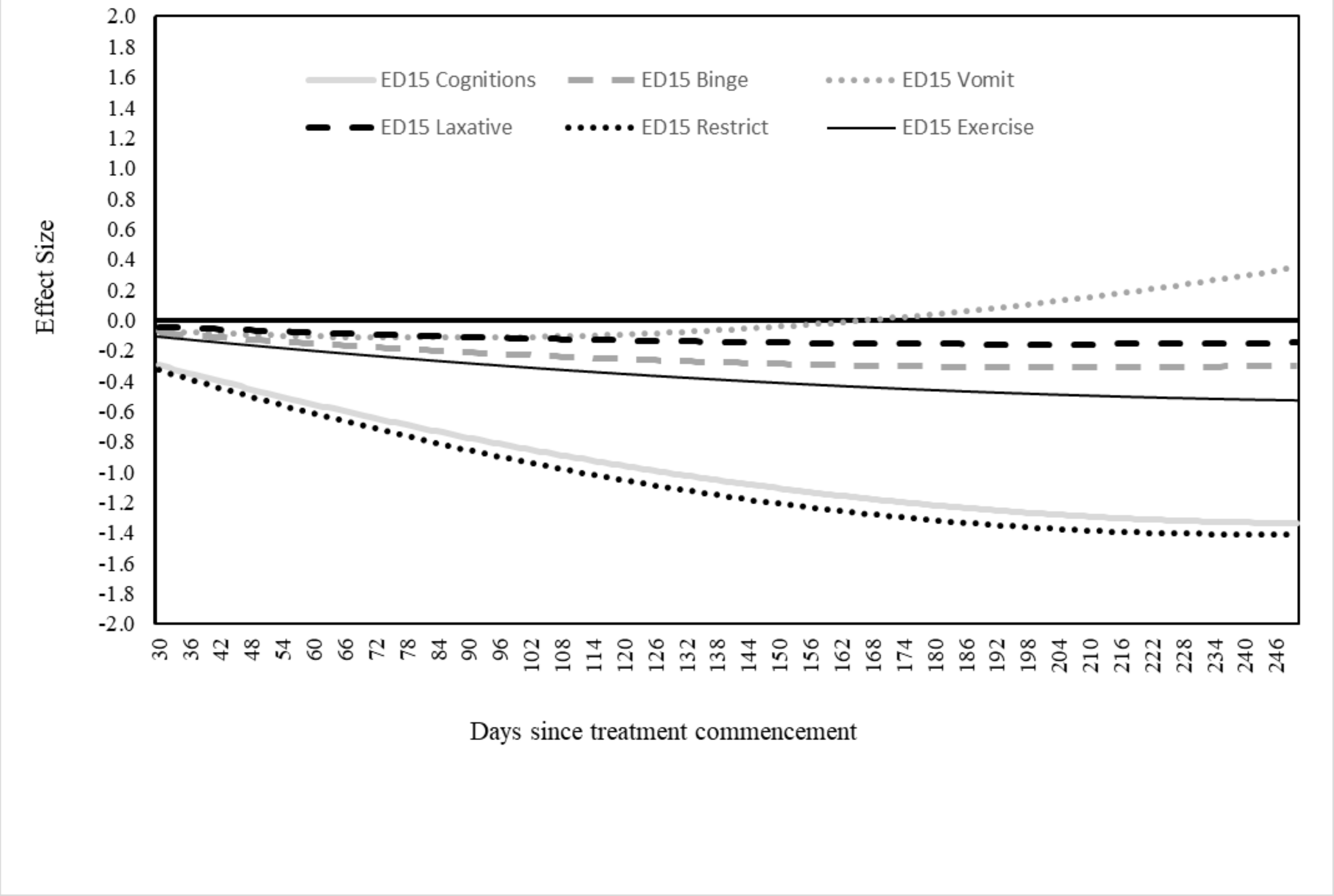


Figure 8.3

ED-15 outcomes effect size trends throughout the course of treatment from 30 days since treatment commencement to 247 days since treatment commencement.



Note. The bolded horizontal line at 0 (in black) represents no change.

First Treatment Experience and Barriers to Treatment Seeking

At end of treatment, 24 of the 80 participants in the whole sample (30%) answered questions about barriers, with 76% (*n* = 19) reporting this was the first time they had sought treatment for eating and/or body image problems. In regard to barriers to treatment seeking, the most endorsed barriers among first time treatment seekers included: "*belief that my problems are not bad enough*" (76%), followed by "*belief that I can handle my problems on my own*" (72%), "*not wanting to lose control over my eating (e.g., put on weight*; 64%), "*not wanting others to worry about my problems*" (64%) and "*feeling too depressed and/or anxious*" (44%). The least cited barrier was difficulties with getting time off work/studies with less than 1% of participants endorsing it, followed by cost of treatment (32%). Over a quarter of participants (36%) endorsed not knowing about available treatment or resources, with 44% citing "not expecting counselling to be helpful" as a barrier and 48% endorsing "concerns about being judged and/or labelled as a barrier".

Post-hoc analyses were conducted to explore whether the top cited barrier "*belief that my problems are not bad enough*" significantly differed from the other four most cited barriers. Chi-square analyses revealed that our top cited barrier significantly differed from the second most cited barrier, "*belief that I can handle my problems on my own"* ($\chi^2 = 7.43, p = .006$), as well as the third most cited barrier "*not wanting to lose control over my eating* (*e.g., put on weight*)" ($\chi^2 = 4.40, p = .04$). Lastly, the topmost cited barrier also significantly differed from the fourth most cited barrier, "*not wanting others to worry about my problems*" ($\chi^2 = 9.04, p = .003$).

In addition, a total of three participants also provided qualitative responses regarding other barriers that prevented them from seeking treatment earlier, with these three participants citing inability to seek treatment earlier due to age restrictions, comments from others regarding their ED not being “bad enough”, not wanting to make a change, parents not having time to organise appointments, as well as long waiting times.

Overcoming Barriers to Treatment Delivery in Low SES Populations

Many barriers to treatment delivery were originally identified when implementing the emerge-ED program, and these can be categorised into barriers related to client cohort and barriers related to the service model. An overview of each of these barriers, as well as how we adapted and deviated from the original service model are discussed in detail below.

Client Cohort Related Barriers

One of the key client cohort related barriers included: poor food security and low food availability, low mental health literacy, as well as poor nutritional literacy in families and varying definitions of “normal eating”. To overcome these barriers, clinicians had to focus on areas outside of the assessment and treatment protocol such as: providing information about access to food banks, updating access to snacks on site and requesting prescriptions from general practitioners (GPs) to lower costs of nutritional supplements.

Another key barrier relating to the client cohort includes the high level of comorbidities, which made it difficult to accurately assess treatment priorities. This meant that clinicians had to quickly adapt and be flexible in having non-protocol sessions, such as having Dialectical Behaviour Therapy skills training sessions alongside CBT-E, as well as working together with alcohol and other drug programs as well as general mental health clinicians whenever possible. A final major barrier to treatment delivery was the lack of support networks and involvement of families, whereby most young people did not want their carers involved or had parents who were unable to support them throughout treatment. To overcome this barrier, clinicians scoped for the interest in a Collaborative Care Skills Workshop to involve carers and provide psychoeducation on the nature of treatment, however, there was not enough uptake for carers to make this feasible even across the two treatment locations. Therefore, clinicians involved a general family peer support worker for carers who were interested and linked families with other providers if they wanted additional support.

Service-related Barriers

A major service-related barrier was associated to the eligibility criteria, whereby there were more clients meeting eligibility for the service than the service could manage. Therefore, the eligibility criteria were refined to avoid the service being saturated with referrals by the addition of an exclusion criteria for Avoidant/Restrictive Food Intake Disorder (ARFID) and Binge Eating Disorder (BED) diagnoses, as well as no previous attempt at evidence-based treatment for EDs.

Another lesson learned during the implementation and delivery of the service related to the true reality of “rapid response”, whereby having waitlists for assessments and treatment were unavoidable when emerge-ED is the only free service delivering ED specialist treatment in South Australia, especially in low SES areas. This meant that emerge-ED clinicians had to shift from doing all the assessments and instead have general mental health clinicians within the service conduct assessment with oversight from emerge-ED clinicians. In addition, rather than having emerge-ED clients in their own service waitlist as was done during the implementation of the services, clients were instead moved to the general emerge waitlist, which meant emerge-ED clients had assess to waitlist support, with general mental health clinicians being upskilled on how to deliver ED psychoeducation to clients who were on the waitlist.

Another service-related barrier was staff anxiety, where general mental health clinicians felt uncomfortable having scales in counselling rooms and using screening tools such as SCOFF (Luck et al., 2002) and Eating Disorder Examination Questionnaire Short (EDE-QS; Fairburn & Beglin, 2008), as well as calculating BMI scores at intake. This was overcome by providing in-services psychoeducation and rationale on the overview of ED treatment, providing helpful tips on language as well as scripts on how to communicate with clients, as well as a strong rationale for weighing and providing clients with screening questionnaires.

Lastly, given that data were collected through the COVID-19 pandemic, another major service-related barrier was the provision of several sessions via telehealth. This meant that clinicians had to adapt treatment protocol such as ensuring diaries and sessional questionnaires were completed as normal and emailed to the clinician prior to the session and ensuring the client self-weighed during the sessions and reported this back to the clinician.

Discussion

The present study aimed to expand our knowledge of the emerge-ED service model approach to early intervention in primary mental healthcare. The first objective of this study was to replicate initial findings of the emerge-ED program by evaluating the program's effectiveness in a new cohort of clients. Findings from the present study replicated treatment outcomes from the initial emerge-ED evaluation (**Chapter 7**), where small to moderate effect size decreases in the ED sessional measure were found at 70 days since treatment commencement for cognitions (*d* = -.63) and ED behaviours (*d* = -.09., -.69), which are comparable to our previous findings for the sessional measure (cognitions *d* = -.45; behaviours *d* = -.12., -.27). However, vomiting behaviour increased the longer participants were in treatment, suggesting people with more severe eating disorders were retained in therapy longer and may have re-engaged in purging behaviours as weight increased or stabilized. Moreover, it is important to note that despite the present cohort being reflective of a COVID-19 sample, with data being collected between July 2020 and March 2022, there were larger treatment effects at 70 days since treatment commencement for the present sample on eating disorder cognitions (*d* = -.63) and dietary restriction (*d* = -.69) compared to our pre-COVID sample in the initial evaluation presented in **Chapter 7**. It is important to note that the first evaluation of emerge-ED (**Chapter 7**) had a higher number of participants at baseline (*n* = 96) compared to the present study. Given the increased prevalence of EDs due to the COVID-19 pandemic, and lengthy waitlists for this free early intervention service, the refined eligibility criteria and limited number of staff specialised in EDs available to treat clients was limited, resulting in a smaller number of participants (*n* = 80) seen at baseline in the present study.

Our findings can also be compared to those Improving Access to Psychological Therapies (IAPT) program, a United Kingdom-based initiative aimed at increasing access to evidence-based psychological therapies for people experiencing common mental health problems, such as depression and anxiety, in primary care settings (Clark et al., 2018). The completion rate for IAPT consumers based on a mean number of sessions completed is lower (M = 6.41; *SD* = 0.91) than the completion rate for emerge-ED consumers who completed treatment (M = 15.67, *SD* = 9.21).

Like the evaluation of the first cohort, only 31% of participants completed end of treatment routine assessment measures but using sessional measures as our primary outcome yielded a greater number of observations, with 76.25% of the cohort completing more than two sessional measures, with a mean number of ED-15 assessments of 10.16 (*SD* = 8.03), thus providing a more feasible assessment tool for this population. Similarly, the IAPT intervention also employs a session-by-session assessment method, which has been reported to maximize the completion rate of patients' assessments (Clark et al., 2018), emphasising the value and advantage of using shorter assessment tools.

The second objective was to examine emerge-ED consumers' views regarding barriers to help-seeking to assist in the development of accessible and effective early intervention services in primary mental health care. The emerge-ED service has a strong focus on removing barriers to treatment seeking to improve accessibility and effectiveness of services. Although the barriers to treatment seeking literature is an emerging body of research with three systematic reviews to date (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017), few studies have investigated barriers to treatment seeking among low SES populations. To our knowledge, only two studies examining barriers to treatment seeking in low SES populations have been published to date, both including ethnic minorities in the United States and published almost two decades ago (Cachelin & Striegel-Moore, 2006; Cachelin et al., 2001). Given previous studies have identified lower rates of help-seeking among those from low SES populations (Lipson & Sonneville, 2017), a better understanding of what prevents those in low SES populations from seeking treatment is warranted, so that emerge-ED can continue to effectively engage this population in early treatment seeking. The present study contributes to this growing body of research by examining barriers to treatment seeking among low SES populations, with our findings revealing the most cited barrier in the emerge-ED sample to be the "*belief that my problem is not bad enough*". This barrier taps into the theme of denial of illness or the failure to perceive the severity of the disorder, and is consistent with previous findings from this thesis, which found higher levels of denial of illness to be associated with less help-seeking (**Chapter 4**) and denial of illness to be uniquely associated with treatment seeking (**Chapter 6**). The second most cited barrier in this group was the "*belief that I can handle my problems on my own*", tapping into ambivalence, which has also been linked as a key barrier to treatment seeking in the literature (Ali et al., 2017).

The third and final objective of the present study was to investigate how the emerge-ED program has adapted to address the barriers to treatment delivery cited by health professionals in the initial evaluation, including improvements to the accessibility, acceptability, and feasibility of the program. It was highlighted that to overcome barriers to treatment delivery clinicians had to deviate from treatment protocols, requiring a high level of flexibility from clinicians, as well as working together with other healthcare providers (e.g., GPs, psychiatrists, other mental health clinicians) to address these barriers. Regarding service-related barriers, the eligibility criteria was the biggest barrier, particularly given the rise in ED symptomology during the COVID-19 pandemic (Zhou & Wade, 2021), clinicians had to refine criteria to better manage the number of referrals coming through, which prejudiced those with ARFID and BED diagnoses. This finding clearly highlights the importance of future research in exploring strategies to increase the scalability of eating disorder treatment programs to address the issues of demand exceeding capacity found in the emerge-ED program.

Limitations

Like the original evaluation of emerge-ED described in **Chapter 7**, despite our efforts to address the limitations cited in the previous chapter in the present replication study, many limitations remain. The main limitation being the low response rates for the extensive questionnaire battery at follow-up time points. It is evident that the use of sessional measures is more appropriate for this population, which allows for the evaluation of changes in outcomes throughout the course of treatment but limits our ability to evaluate whether treatment outcomes are sustained at follow-up time points and long lasting. Moreover, given a low frequency of laxative use at baseline with very few participants endorsing engagement in this behaviour, this variable was not normally distributed, and results should be interpreted with caution. We also note that data were not missing at random, with lower weight people and people with higher levels of depression less likely to complete the questionnaire on their eating. This represents a violation of one of assumptions of mixed modelling, and the results should not be generalised to these groups. Lastly, there was no data available to highlight the number of clients who were assessed for eligibility for the emerge-ED services across the data collection period and how many met exclusion criteria.

Conclusions

The present study addresses a significant gap in early intervention for eating disorders by replicating initial findings from an early intervention model in a primary health care setting. Early intervention models in primary health care settings present as a key strategy in removing barriers to treatment seeking for individuals with eating disorders and highlight the potential to promote early help-seeking among this population. Our findings shed light into barriers to treatment-seeking among low SES populations, revealing denial of illness to also present as a key barrier among this population. Our findings highlight the importance of considering primary health care settings as an essential site in delivering early intervention services for eating disorders.

Chapter 9

General Discussion[7]

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[7] This chapter contains content from the Discussion sections of four published papers that are provided in **Appendices A** to **D**.

Radunz, M., Keegan, E., Osenk, I., & Wade, T. D. (2020). Relationship between eating disorder duration and treatment outcome: Systematic review and meta-analysis. *International Journal of Eating Disorders*, *53*(11), 1761-1773. https://doi.org/10.1002/eat.23373

Radunz, M., Ali, K., & Wade, T. D. (2022). Pathways to improve early intervention for eating disorders: Findings from a systematic review and meta-analysis. *International Journal of Eating Disorders*. https://doi.org/10.1002/eat.23845

Radunz, M., & Wade, T. D. (2023). Towards an understanding of help-seeking behaviour for disordered eating: Refinement of a barriers to help-seeking measure. *Early intervention in psychiatry* Online ahead of print. Doi: 10.1111/eip.13394

Radunz, M., Pritchard, L., Steen, E., Williamson, P., & Wade, T. D. (2021). Evaluating evidence-based interventions in low socio-economic-status populations. *International Journal of Eating Disorders*, 54(10), 1887-1895.https://doi.org/10.1002/eat.23594

Overview

As discussed in **Chapter 1**, the overarching aim of this thesis was to provide a multifaceted approach to early intervention in EDs. This was achieved by first establishing whether duration of illness should be a focus of early intervention models. Second, by identifying the most powerful barriers to treatment seeking that would need to be tackled to promote early intervention. Third, by evaluating outcomes when early intervention was provided in a primary service setting in contrast to the FREED model in tertiary settings. Four approaches were utilised to address the main aims of this thesis: systematic reviews, meta-analyses, confirmatory factor analyses and primary data analyses. This final chapter integrates the findings across the five studies undertaken as part of this thesis and considers the overall contribution of the findings in informing future early intervention models for EDs.

Summary of Findings

Our first approach to addressing the overarching aim was to examine the use of duration of untreated illness as a criterion for entry into programs, when there is a lack of validation for this criterion in the field of EDs. Therefore, in **Chapter 3** a systematic-review and meta-analysis was conducted to examine the relationship between duration of illness and treatment outcomes. Results from the systematic review and meta-analysis revealed no associations between duration and treatment outcome for both anorexia nervosa (AN) and bulimia nervosa (BN), which suggests the use of duration as an entry criterion into early intervention programs is potentially harmful.

Our second approach to address our aim was the identification of barriers to treatment seeking to promote early treatment seeking. To this end **Chapter 4** involved a systematic review and meta-analysis investigating the quantitative association on factors (i.e., perceived barriers, characteristics associated with treatment seeking and demographic variables) associated with help-seeking behaviour. From the 19 included studies, a total of 141 perceived barriers and individual characteristics and 56 demographic variables were identified and synthesised into 24 unique variables. Two variables were significantly associated with help-seeking behaviour, including denial of illness or the failure to perceive the severity of the disorder and inability of others to provide help. Less help-seeking was predicted by higher levels of denial and less perceived ability of others to provide help.

Further to quantitatively summarising the available literature (**Chapter 4**), an important part in aiding our understanding of what prevents individuals with EDs from seeking help is to quantitatively assess barriers to treatment seeking using validated and standardised measures. One of the key limitations in this literature is the lack of validated and standardised measures available to quantitatively assess barriers to treatment seeking, with the very few quantitative studies available creating their own measures to assess barriers to treatment seeking and failing to report on the psychometric properties of these measures. **Chapter 6** aimed to address this important gap in the literature by refining a previously validated assessment tool for barriers to treatment seeking, the Perceived Barriers to Psychological Treatment scale (PBPT; Mohr et al., 2010), with a combination of items from the Barriers to Seeking Help for ED items (BATSH-ED, Ali et al., 2020). Confirmatory factor analyses were conducted followed by correlational and regression analyses to assess validity of the selected questionnaire items. From the four models tested, a 15-item six-factor solution provided the best fit. A range of psychosocial measures had relationships in the expected directions with the questionnaire subscales, with the denial of illness subscale being a unique predictor of treatment seeking. Thus, providing further support for one of the key findings in **Chapter 4** and the qualitative findings in **Chapter 8**, suggesting denial of illness to be a key barrier to treatment seeking for individuals with EDs.

The third approach to our overarching aim was explored in **Chapters 7** and **8**, which present an early intervention model in EDs focusing on removing barriers to treatment seeking by promoting early and rapid access to treatment. The emerge-ED program is an early intervention strategy in a primary healthcare setting, allowing clients to self-refer, thus removing potential barriers along the pathway to care for EDs by reducing the number of professionals seen to access specialist ED services. Moreover, the program focuses on delivering services in areas of low socio-economic-status (SES), which have been shown to experience a high prevalence of EDs and experience more barriers to treatment seeking (Mulders-Jones et al., 2017). **Chapter 7** presented a case series evaluation of participants who engaged with the emerge-ED program from March 2018 to December 2019. Preliminary results were promising with large within-group effect size decreases from baseline to end of treatment across all clinical outcome measures. At end of treatment, 83.3% of participants scored below the clinical cut-off for ED psychopathology compared to 15.7% at baseline. Given the very high rates of missing data at the follow-up time points, the evaluation of treatment outcomes using a sessional measure yielded a greater number of observations, which allowed for more robust analyses of trajectories of change over time. Results from the sessional measure revealed significant decreases in scores over time, supporting the further implementation of emerge-ED services across low SES areas. **Chapter 8** largely replicated the findings from the initial emerge-ED evaluation (**Chapter 7**) in a new cohort of participants. Further, findings on participants' views on barriers to treatment seeking and an examination on how this early intervention model in primary health care has evolved overtime to overcome barriers to treatment delivery in low SES settings were presented. Findings from a cohort of participants who commenced treatment at emerge-ED between from July 2020 to March 2022 replicated findings from the initial emerge-ED evaluation (**Chapter 7**). Small to moderate effect size decreases were found in the ED sessional measures at 70 days since treatment commencement. Regarding barriers to treatment seeking, the most cited barrier was "*belief that my problems are not bad enough*" with 76% of the sample endorsing this barrier, which is reflective of denial of illness. This finding is consistent with key findings reported in **Chapter 4** and **6**. To overcome barriers to treatment delivery clinicians had to deviate from treatment protocols and work together with other health care providers to overcome these barriers. Eligibility criteria was the biggest service-related barrier, which led clinicians to refine the inclusion and exclusion criteria of the program to better manage the number of referrals to the service. Unfortunately, refinement of the inclusion and exclusion criteria prejudiced individuals with ARFID and BED diagnoses.

Integration of Key Findings with Previous Research and Clinical Implications

Duration as a Predictor of Treatment Outcomes

The first aim in providing a multifaceted approach to early intervention was to examine whether duration of illness should be emphasised in early intervention models for EDs. Our systematic review and meta-analysis revealed no association between duration of illness and treatment outcomes for both AN and BN, suggesting a shorter duration does not lead to better treatment outcomes. This finding has important clinical implications in the development of ED specific early intervention models but also in the treatment of EDs more broadly. Our findings highlight that informing early intervention models using a staging approach for psychiatric disorders to EDs is not appropriate and not supported by empirical evidence. Moreover, the three-year duration criterion has been investigated with respect to treatment of AN, however, non-underweight EDs are more prevalent than underweight EDs, with Other Specified Feeding or Eating Disorders (OSFED) accounting for up to 53% of community cases (Machado et al., 2013). Therefore, existing early intervention models for EDs (i.e., FREED) are tailoring entry to treatment for individuals with AN, when in fact non-underweight EDs are more prevalent. Further, irrespective of ED diagnosis, the use of an artificial entry criterion based on a duration of illness of less than three years is harmful to all individuals with EDs, as there is no evidence to suggest that a longer duration of illness will lead to poorer treatment outcomes. Therefore, our findings highlight that using a staging model defining early phase EDs as an illness duration of less than three years is problematic and harmful and prevents individuals who may benefit from early treatment from receiving it.

Previous research provides support for our findings, including work conducted by Ambwani and colleagues (2020), who found no differences in treatment outcomes (improvements in body mass index and ED psychopathology) across an early stage (less than three years) and severe and enduring (seven years or more) ED group. Raykos et al. (2018) and Calugi et al. (2017a) also found a lack of support for duration in predicting treatment outcomes. Similarly, our study is further supported by a previous systematic review and meta-analysis conducted by Gregersten et al. (2019), who also failed to find support for duration in predicting treatment outcomes for AN.

Regarding ED treatment more broadly, our findings may inform treatment of individuals with EDs, particularly those who are categorised as having “severe and enduring eating disorders”, which have been defined in the literature using varying durations in terms of number of years, from as short as three years duration (Hay et al., 2012) to longer durations such as 20-40 years (Robinson et al., 2015). Our findings shed light in this field by providing evidence that duration of illness alone should not influence choice of treatment and individuals with “severe and enduring eating disorders” can achieve recovery when receiving evidence-based treatment.

Barriers to Treatment Seeking

Given we were able to establish in this thesis that duration of illness should not be emphasised in early intervention models for EDs, the next step towards a comprehensive approach to early intervention is to investigate the factors that hinder individuals with EDs from seeking treatment. By identifying and addressing these barriers, we can develop more effective strategies for informing early intervention models that focus on the provision of evidence-based treatment for individuals with EDs as early as possible.

Denial of illness

The biggest barrier to treatment seeking identified in this thesis was denial of illness or the failure to perceive the severity of the disorder. Denial emerged as the strongest negative predictor of help-seeking in our systematic review and meta-analysis (**Chapter 4**). It was the only subscale in our refined barriers to treatment seeking questionnaire to be uniquely associated with treatment seeking (**Chapter 6**) and the most cited barrier to treatment seeking in our low SES emerge-ED sample (**Chapter 8**). Across these three chapters (**Chapter 4, 6** and **8**), denial encompassed items ranging from an inability to perceive the severity of illness (e.g., “I don’t believe I have a problem”), to an inability to perceive the need for help and support (e.g., “The problem will get better without therapy”). Vitousek and colleagues (p. 394, 1998) have previously hypothesised that denial is a major reason for treatment avoidance in EDs: “*Individuals may never come to the attention of treatment personnel if their denial is sufficiently persuasive, their opposition sufficiently forceful, or their lives sufficiently isolated that significant others fail to intervene on their behalf.*” Denial is said to represent attempts to preserve the ego-syntonic symptomatology of an ED, including not only the valued goal of thinness in Western cultures (Thompson & Stice, 2001), but also the positively valanced personal characteristics of competence, mental strength, and self-control (Serpell et al., 1999).

This barrier is supported by previous findings from the three systematic reviews on barriers to help-seeking (Ali et al., 2017; Innes et al., 2017; Reagan et al., 2017), which also identified denial as a key barrier to treatment seeking. Similarly, denial of illness has also been previously correlated with a greater resistance to treatment (Abbate-Daga et al., 2013), while self-identification with an eating disorder problem has been associated with greater likelihood of seeking help (Fatt et al., 2020a; Fatt et al., 2020b). Recognition of disordered eating as a problem and not a virtue has been suggested to represent the first step in the ED help-seeking process (Hepworth & Paxton, 2007). This is consistent with findings on help-seeking across other mental health problems, where slower problem recognition was associated with a greater likelihood of delaying help-seeking (OR = 20.28), with a clinical sample of Australians who took more than one year to recognise an anxiety or depression problem being 20 times more likely to delay treatment seeking (Thompson et al., 2008). It is also crucial to consider the normative nature of shape and weight concerns when considering denial as a barrier to treatment seeking. Shape and weight concerns and societal norms may contribute to the denial experienced by individuals with EDs, whereby they can influence individuals to perceive their behaviours as acceptable or even desirable, further complicating their recognition of their need for help.

Denial might not necessarily be linked to a lack of ED knowledge (Ali et al., 2020; Griffiths et al., 2018) but rather a low perceived need for help (Lipson et al., 2017). In addition to the ego-syntonic identification that makes individuals reluctant to surrender the ED, studies suggest that participants were able to identify an ED in others but unable to recognise it in themselves (Mond et al., 2006b; McAndrew et al., 2018). The "self-other" discrepancy may be closely related to the "self-other" discrepancy found in the self-compassion literature, which argues that most people are less compassionate and harsher towards themselves than to other people (Neff, 2003). Low self-compassion has been found to be a predictor of ED pathology (Kelly et al., 2014), and self-compassion interventions for ED pathology and body image have been shown to be effective in reducing eating and body image concerns (Turk & Waller, 2020).

If ED symptomatology is used to address perceived limitations in self, using behaviours which are seen to be unacceptable for others but justified for the deficient self, this suggests some important targets for increasing early help-seeking. Vitousek and colleagues (1998) stress the importance of psychoeducation in the context of *misinformation* about diet and weight that is widely disseminated in popular culture as well as by health organisations seeking to reduce obesity prevalence. This psychoeducational content should stress the value of the goals of health, competence, mental strength, and self-control but explain why poor nutritional status is unable to achieve these valued goals. In addition, the ED typically takes the person further away from their important values such as truth, social connectedness, self-respect, and contributing their skills to make a difference in the world (Vitousek et al., 1998). Psychoeducation that explains how even modest dieting can adversely impact the brain, and how the brain can form new and flexible connections with adequate nutrition, has been shown to significantly weaken the overvalued importance of control over weight, shape and eating (Zhou & Wade, 2020). This work could incorporate functional self-compassion (Braehler et al., 2013) to help understand the threat posed by a perceived deficient self will not best be dealt with using the destructiveness of ED behaviours but through a pathway of self-respect that is more effective in attaining valued goals than self-criticism (Warren et al., 2016).

Perceived inability of others to provide help

The second key barrier that emerged as a significant predictor of help-seeking in our systematic review and meta-analysis (**Chapter 4**) was "*perceived inability of others to provide help*". The three items comprising this theme measured the perceived inability of others to provide help (e.g., "I don't think others can help me"), the perceived inability of others and anybody to understand one's problems (e.g., "I don't think anybody understands my problems"). Thus, this theme touches upon the feeling of "being alone" in one's experiences, whereby others are perceived to lack understanding and in turn are perceived to be unable to provide help. Problems with interpersonal relationships have been identified as a common factor across different models of ED maintenance (Pennesi & Wade, 2016), and a therapeutic focus on strengthening interpersonal relationships has been shown to improve disordered eating (Fairburn et al., 2015). The Maudsley Model of Anorexia Nervosa Treatment for Adults (MANTRA; Schmidt et al., 2014) considers difficulties with interpersonal relating to be an important maintenance factor, and accordingly incorporates a module on the social and emotional mind, which addresses: relationship patterns, expressing emotions and needs appropriately, and learning to see the world from other people's perspective.

The emergence of "denial of illness" and "perceived inability of others to provide help" as the only significant barriers associated with help-seeking may be connected to the broader literature on motivation to change. Two key drivers of change include the perceived importance to change and confidence to change. Individuals who experience denial of illness may underestimate the importance of change, whilst those who perceive an inability of others to provide help may be lacking the confidence necessary to change and initiate the help-seeking process.

Early Intervention in Primary Health Care

The emerge-ED program is the first early intervention service for EDs in a primary health care setting. The program has shown promising results across two different samples, as revealed in the evaluations conducted in **Chapter 7** and **8**. The results showed moderate to large within-group effect size decreases across the ED sessional measure on cognitions and behaviours at 70 days since treatment commencement across both cohorts. The emerge-ED early intervention model emphasizes the importance of considering primary health care settings as an essential site for delivering early intervention services for EDs, in addition to tertiary sites.

The implementation of early intervention models for EDs in primary health care, such as the emerge-ED model presented in this thesis, tackle numerous barriers to treatment seeking, which in turn ensure individuals with EDs are accessing treatment as early as possible. One key barrier that emerge-ED tackles is the reduction in the number of professionals seen to access ED treatment. In Australia, apart from emerge-ED, there are no specialist ED services in primary health care, meaning patients with EDs are required to see a general practitioner or paediatrician to receive a referral to an ED specialist service. Many GPs are not adequately trained in identifying and managing EDs (Ayton & Ibrahim, 2018), leading to many patients with EDs going undetected or referred to the wrong services (Johns et al., 2019). Emerge-ED being situated within a community primary mental health care services addresses this barrier, as patients can be self-referred and do not require GP visits or referrals. Moreover, as EDs are characterised by low help-seeking rates (Hart et al., 2011) and denial of illness is a significant barrier to treatment seeking, emerge-ED may promote early help-seeking for EDs, as individuals who may seek help for other comorbid mental health concerns, such as mood, can be screened for ED and receive the appropriate specialist ED treatment within the same service provider.

Another key barrier that emerge-ED addresses in the current service model for EDs is the transition between services due to age restrictions. Emerge-ED is delivered through headspace services, which caters for individuals from early adolescence to young adulthood, from age 12 to 25. Emerge-ED sees clients aged 16 to 25, meaning that young people are not required to transition from child and adolescent mental health services to adult mental health services, thus addressing the gap of young people who still require help losing contact with specialty services due to age restrictions (Wade, 2022). Lastly, given individuals from low SES have been reported to experience a higher prevalence of EDs and more barriers to treatment seeking (Mulders-Jones et al., 2017), emerge-ED being placed in areas of low SES, ensures that access to services is available to these populations, who are even less likely to seek treatment than those from higher SES (Sonneville & Lipson, 2017).

Therefore, the provision of early intervention services within primary health care, such as the emerge-ED model presented in this thesis, promotes early help seeking for EDs by tackling several barriers to treatment seeking. First, it provides seamless ED services by reducing the number of providers seen. Second, it ensures the detection of EDs in individuals who may have high levels of denial of illness by allowing clients who self-refer for other mental health problems to have their ED detected and treated within the same service. Third, it addresses the gap in the transition between child and adolescent services to adult services by catering to individuals from early adolescence to early adulthood. Fourth and last, it focuses on the provision of ED services in areas of low SES, which have been shown to be less likely to seek treatment, have higher ED prevalence and report more barriers to treatment seeking.

Limitations

The findings presented in this thesis should be interpreted in the context of several limitations. One key limitation across the two emerge-ED evaluations (**Chapter 7** and **8**) was missing data, with very small rates of data completion for follow-up time points. This precluded our ability to examine treatment outcomes for emerge-ED samples at follow-up, thus it is unclear if the treatment effects are long lasting. Another key limitation across this thesis was the small pool of studies identified in our systematic review and meta-analyses (**Chapter 3** and **4**), where the small number of studies available across these reviews limited power of our subgroup and stand-alone analyses in **Chapter 3** and limited our ability to make more robust conclusions regarding factors associated with treatment seeking in **Chapter 4**. Moreover, the small number of quantitative studies available (e.g., **Chapters 3** and **4**), marked heterogeneity (**Chapter 3**) and large amounts of missing data (**Chapters 7** and **8**) may have introduced bias. Moreover, the data in **Chapter 8** were not missing at random, with lower weight people and people with higher levels of depression less likely to complete the questionnaire on their eating. Furthermore, despite the evaluations of emerge-ED (**Chapters 7** and **8**) including individuals from low SES populations, there was still a lack of diversity among participants included in this research. For example, most participants in the studies identified in our reviews in **Chapters 3** and **4** were young females from Western countries. Many studies across these two reviews failed to report on the SES and ethnicity of participants, with the few studies that did report this information having predominantly white female samples. Moreover, the sample included in the refinement of our barriers to treatment seeking measure (**Chapter 6**) was entirely female and over 90% of our emerge-ED sample in **Chapters 7** and **8** was female, thus males were significantly unrepresented in this thesis. This impacts our generalisability of our findings to more diverse sample of people with eating disorders.

Directions for Future Research

The findings of this thesis suggest several avenues for future research in early intervention in eating disorders. The emerge-ED program provides one novel early intervention approach fit for purpose for individuals with EDs, aiming to overcome barriers to treatment seeking and promote early help-seeking in this population. However, much work is still required in better understanding, measuring, and assessing, as well as overcoming barriers to treatment seeking for eating disorders, so that these areas can continue to inform future research in early intervention in this field.

Given that **Chapter 3** revealed duration to not be associated with treatment outcomes, it is evident that future research should emphasise the importance of early intervention services focusing on the provision of treatment as early as possible and current ED early intervention models should remove the 3-year duration as entry criteria into early intervention models of care.

Our finding on denial of illness being a key barrier to treatment seeking across three different studies in this thesis (**Chapters 4, 6** and **8**) highlights the importance of future work in defining and measuring denial of illness. Future studies should further test the factor structure of the refined barriers to treatment seeking measure presented in **Chapter 6** and work with individuals with lived experience in developing and trialling a set of items that are more reflective of denial of illness. In further validating this questionnaire, future research should ensure the use of a high-risk sample and include more diverse samples of individuals with eating disorders, such as ensuring males are appropriately represented. Further, to our knowledge, no studies have addressed the gap in the measurement of help-seeking for EDs, which presents as a significant gap in the literature given the low rates of help-seeking in this population. Given that measurement of help-seeking behaviour is also an important aspect in improving the current quality of the literature on barriers to help-seeking, future studies should develop and validate a standardised measure of assessing help-seeking behaviour. In addition, future studies should examine the relationship between barriers, individual characteristics and demographic variables impacting help-seeking in a mediated model, which may help explain whether these relationships are in fact linear or whether barriers may work together. For example, stigma may lead to denial which in turn is associated with less treatment seeking.

Moreover, given that denial of illness and perceived inability of others to provide help, significantly predicted lower help-seeking in **Chapter 4**, with denial also being identified as a key barrier to treatment-seeking in **Chapters 6** and **8,** future research in early intervention should investigate the effectiveness of interventions that target specific barriers to treatment seeking, such as denial of illness. One such approach could involve the investigation of the impact of psychoeducation interventions on the promotion of earlier help-seeking. These psychoeducation interventions may involve information about the risks of EDs and the risks of delaying treatment and evaluating, as well as how EDs take people further away from valued goals, which could be delivered using elements of self-compassion to address the "self-other" discrepancy. Future studies could also investigate the impact of interventions to develop skills in expressing emotions and needs appropriately such that support can be garnered from significant others, thus targeting inability of others to provide help as a barrier. Another strategy to overcome barriers to treatment seeking and promote earlier help-seeking is for future research to examine the role of lived experience and peer support, where those with lived experience can encourage individuals with EDs to seek treatment by drawing on their own treatment experiences.

While the two evaluations of emerge-ED presented in **Chapters 7** and **8** showed promise in the removal of barriers to treatment seeking and promotion of early help-seeking, little is known about the long-term impacts of this intervention model on treatment outcomes at follow-up time points. Thus, future work is required in addressing the long-term outcomes of this program and improving data collection with this population. Lastly, given emerge-ED is the first early intervention program for EDs in a primary health care setting, future studies should further explore the implementation of early intervention strategies for EDs in primary health care.

Conclusions

This thesis made several significant original contributions to knowledge. Specifically, our research was the first to conduct a meta-analysis investigating the impact of duration of illness on treatment outcomes (**Chapter 3**) and the first to use meta-analytic strategies to examine the relationship between factors associated with treatment seeking and help-seeking behaviour (**Chapter 4**). Our research was also the first to present an early intervention strategy in primary health care for EDs and to demonstrate the potential of early intervention strategies in primary health care in removing barriers to treatment seeking (**Chapters 7** and **8**). These novel contributions are significant to the field of early intervention in eating disorders as they suggest that duration should not be emphasised as an entry criterion into early intervention programs, highlighting that the use of staging approaches for other psychiatric disorders are not fit for purpose for people with EDs. Our findings suggest that instead, early intervention strategies for EDs should place an emphasis on the removal of barriers to treatment seeking and promotion of early help-seeking across eating disorder populations. We clearly demonstrated that one effective approach to remove barriers to treatment seeking and promote early help-seeking is the implementation of early intervention strategies in primary health care (**Chapters 7** and **8**), highlighted by findings from our emerge-ED program. Ultimately, this thesis emphasizes the need for future research in investigating methods to assess, identify and evaluate interventions to remove barriers to treatment seeking for people with eating disorders to promote earlier help-seeking.

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