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Early Intervention Programs for Adolescents and Young Adults With Eating Disorders: Main Report

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Key Messages

What Is the Problem? How Might Early Intervention Help Fix the Problem?

- The number of adolescents and young adults living with eating disorders is on the rise. This increase was especially noticeable during the height of the COVID-19 pandemic, with more than a 50% increase in the number of young women being hospitalized with an eating disorder.
- Early intervention programs are those delivered by community or health care–based organizations that offer interventions to treat adolescents and young adults living with eating disorders within the first 3 years of diagnosable disorder, with the intention of providing earlier access and preventing disease progression.

What Did We Do?

- Advisors with lived experience of eating disorders shared their perspectives and priorities to help reviewers contextualize the evidence and interpret the findings in the literature. Advisors highlighted their treatment experiences and priorities for early intervention, highlighting equity considerations and challenges.
- We conducted a literature search to identify, gather, synthesize, and summarize relevant evidence to inform our understanding of the clinical effectiveness and clinical harms of early intervention programs.
- A search of the economic literature was conducted to identify economic evaluations of early intervention programs to treat adolescents and young adults living with eating disorders. Based on an assessment of the clinical evidence, the uncertainty and heterogeneity of the information precluded a de novo cost-effectiveness analysis (CEA). As such, a narrative summary of the health care resources required to implement an early intervention program for adolescents and young adults living with eating disorders was conducted.

What Did We Find?

- Advisors with lived experience of eating disorders described a need for greater access to specialized services focused on eating disorder treatment, equity, capacity building, and culture change. Specific treatment approaches mentioned included family-based treatment, cognitive behavioural therapy, peer support, and group therapy.
- We identified 14 studies related to the clinical effectiveness of early intervention programs. We did not identify any studies evaluating clinical harms.

Key Messages

- The findings from included studies suggest that earlier engagement and access to eating disorder support could have clinical benefits; however, interpretation of these findings are uncertain due to various factors.
- No evidence was identified in the search for information on the cost-effectiveness of early intervention programs for the treatment of adolescents and young adults living with an eating disorder.
- The resources needed to run early intervention programs (or other similar interventional programs) to treat eating disorders may include administration, staffing, training, IT support and infrastructure, and other overhead costs related to the location in which the service is provided.

What Does This Mean?

- The clinical evidence suggests that investment of health care resources into early intervention programs shows potential for overall benefit and may help address challenges with access to treatment, which was identified as an issue by those with lived experience.
- The human and financial resources required to implement early intervention programs will vary depending on the treatment options and treatment frequency chosen.
- The demands on an already limited pool of specialized health care resources in eating disorder care are important considerations when choosing whether to implement any new eating disorder treatment programs. Training and recruiting of specialized health care providers will be a key implementation consideration for any new early intervention program for the treatment of eating disorders.
- Further consultation with a diverse group of adolescents and young adults with lived experience with eating disorders might be beneficial to inform implementation of early intervention programs within the Canadian context.

Authorship and Acknowledgements

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External Reviewers

The following individual kindly provided comments on a draft version of this report.

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Conflicts of Interest

Ayisha Kurji, who provided external review of the draft report, is co-investigator on a Canadian Institutes of Health Research – Transforming Health With Integrated Care grant that is looking to help build evidence for an adapted FREED model of care in eating disorders. No other conflicts of interest were identified.

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Abbreviations

AN	anorexia nervosa
BDI-II	Beck Depression Inventory-II
BED	binge-eating disorder
BMI	body mass index
BN	bulimia nervosa
CAPS	Child and Adolescent Perfectionism Scale
CBT	cognitive behavioural therapy
CBT-P	cognitive behavioural therapy for perfectionism
CEA	cost-effectiveness analysis
CI	confidence interval
CIA	Clinical Impairment Assessment
CORE-10/OM	Clinical Outcomes in Routine Evaluation-10/Outcome Measure
DASS-21	Depression, Anxiety and Stress Scale-21
DUED	duration of untreated eating disorder
DUSC	duration of eating disorder onset to specialist contact
EBW	expected body weight
EDE-Q	Eating Disorder Examination Questionnaire
EDI	Eating Disorder Inventory
FBT	family-based treatment
FT	family therapy
FREED	First Episode and Rapid Early Intervention in Eating Disorder
GOAS	Global Outcome Assessment Schedule
GRIPP2	Guidance for Reporting Involvement of Patients and the Public 2
HoT	home-based treatment
HTA	health technology assessment
IT	information technology
LEE	Level of Expressed Emotion
MID	minimally important difference
MROC	Morgan and Russel Outcome Categories
MROAS	Morgan-Russel Outcome Assessment Schedule
OSFED	other specified/unspecified feeding and eating disorder
PSYCHLOPS	Psychological Outcome Profile
RCT	randomized controlled trial

ROB2	Risk of Bias Tool for Randomized Trials Version 2
ROBINS-I	Risk of Bias in Non-randomized Studies – Interventions
SCL-90-R	Symptom Check List 90-Revised
SES	socioeconomic status
TAU	treatment as usual
WSAS	Work and Social Adjustment Sale

Definitions

- An **adolescent or young adult** is any person between 10 and 25 years of age.[1-3]
- **Early intervention** includes any treatment or intervention that is provided within the first 3 years of diagnosable disorder.[3]
- **Early intervention programs** are those delivered by community or health care–based organizations that offer interventions to treat adolescents living with eating disorders within the first 3 years of diagnosable disorder, which may include multidisciplinary approaches to care.[3]

Background and Rationale

People hospitalized due to eating disorders are reported to have mortality rates 5 to 7 times higher than the general population.[4] During the COVID-19 pandemic, the number of youth seeking treatment for eating disorders in Canada increased, with the Canadian Institute for Health Information (CIHI) reporting an increase of more than 50% in hospitalizations for young women with eating disorders.[5,6] Those numbers are lower than the actual number of people with illness due to the underrepresentation of youth who may not be presenting to hospital because of issues with access to care or other cultural or social barriers to accessing treatment, in addition to access restrictions put in place during the COVID-19 pandemic. The increase in these hospitalizations underscores the importance of early intervention and prevention. Additionally, many people — even those with severe illness — will not meet the criteria for medical admission. In Canada, there is currently limited ability for people outside of major urban centres to access specialized care options for eating disorders, particularly inpatient care. Access to treatment is also impacted by access to diagnosis and other factors associated with marginalization (e.g., gender).[7] An additional barrier to mental health care, including eating disorders, is that it is often not publicly funded, making it out of reach financially for many to receive.

While there is currently no consensus on the definition of what "early intervention" means in relation to eating disorder treatment, the general definition of early intervention is "the detection of illness at the earliest possible point during the course of a diagnosable disorder, followed by the initiation of stage-specific, tailored or targeted evidence-based treatment, which is adapted and sustained for as long as necessary and effective" (p. 321).[3] The authors of a systematic review determined that the average duration of untreated eating disorders before first treatment ranges from 29.9 months for anorexia nervosa to 53.0 months for bulimia nervosa and 67.4 months for binge-eating disorder (BED); disease onset was determined through either self-reporting or clinician interview.[8] There is some existing uncertainty in the literature about the relationship between the time to eating disorder treatment initiation and patient outcomes, such as the likelihood of disease remission.[8] It is difficult to establish the causative effect of timing on patient outcomes. Earlier identification and treatment of adolescents and young adults with eating disorders is intended to aid in management of the eating disorder while it is relatively mild, and to aid in preventing negative medical outcomes before the condition becomes chronic. Preventing hospitalizations, morbidity, and mortality are some key goals of early intervention programs.

Early intervention programs may include components such as telehealth or virtual care, guided self-help applications or programs, digital tools for self-monitoring, and family-based interventions. Health care providers involved in the development and delivery of early intervention programs include but are not limited to family physicians, nurse practitioners, nurses, occupational therapists, dietitians, social workers, counsellors, and clinical psychologists. These interventions may be delivered in a variety of care settings, including outpatient hospital-based clinics and primary or community care, out of hospital and without specialists.

Defined early intervention programs for adolescents and young adults with diagnosed eating disorders are not currently an established option for treatment in Canada. Some people may receive early intervention for

eating disorders; however, it does not seem like these early interventions are delivered in a consistent way. There is some consensus in the clinical community that promoting earlier interventions for adolescents and young adults with eating disorders can significantly reduce health care and human resource costs and result in better patient outcomes, such as avoided hospitalizations.[3] Given the resourcing challenges associated with the provision of adequate and comprehensive care for adolescents and young adults with well-developed eating disorders, implementing early intervention programs represents an opportunity for Canadian health systems to reduce costs and improve health outcomes.

Objective

The objective of this health technology assessment (HTA) was to determine lived experiences and clinical and economic factors that decision-makers may consider when seeking to implement publicly funded early intervention programs for adolescents and young adults with eating disorders in Canada. In addition, this HTA aims to provide decision-makers with some insight on equity considerations for early intervention programming for adolescents and young adults with eating disorders and how they might be implemented equitably.

To do this, CADTH conducted an HTA that:

- engaged people with lived experience of eating disorders, either as people with direct experience themselves or as caregivers, to understand what they consider to be key treatment priorities for early intervention programs and to identify potential challenges in meeting these priorities were early intervention programs to be publicly funded
- assessed the clinical evidence regarding the effectiveness, harms, and composition of early intervention programs for adolescents and young adults with eating disorders
- assessed the economic evidence regarding the cost-effectiveness of early intervention programs for adolescents and young adults with eating disorders, as well as summarized the resources required to implement such a program.

Methods

We followed a protocol that was written a priori.[9] We prospectively registered the protocol for the clinical review in the international PROSPERO repository (registration number: CRD42023431402). The Supporting Information document (refer to *Amendments and Deviations From the Protocol*) identifies amendments or deviations from the protocol made during this review.

Results

Engagement With Individuals With Lived Experience

Overview

For this HTA, CADTH engaged with several individuals with lived experience of an eating disorder whose first-hand knowledge, understanding, and experiences of treatment contextualized the evidence found in the literature and helped reviewers interpret the overall findings of the assessment. These individuals either had personal experience with an eating disorder themselves or were a caregiver of an adolescent or young adult with an eating disorder. CADTH also engaged with a clinician with direct experience working with individuals with eating disorders and their families. These engagements offered research officers insights into the perspectives of individuals with lived experience of eating disorder treatment, highlighting their needs and priorities and allowing for a more nuanced understanding of the literature. Individuals participating in engagement activities are referred to as participants or advisors.

Perspectives Shared

People with lived experience contributed thoughts and perspectives on barriers to treatment, equity considerations, and priorities for early intervention programs.

Barriers

Barriers that were identified include access to services due to perceived gaps in clinician knowledge and familiarity, lack of specialized services, affordability of private services, geographic proximity, system navigation, and system capacity. Societal attitudes surrounding eating disorders were also identified as a barrier, with diet culture and fat shaming specifically identified. Individual perspectives of youth and families can also present a challenge in consenting to services or participating actively in their own care. Lack of awareness of eating disorders or a normalization of dieting, weight loss, and exercise can prevent recognition of eating disorders. For example, adolescents or young adults who are unable to appreciate the seriousness of their condition may refuse to participate in care or consent for their parents to speak with health care providers, rendering early intervention difficult.

Additional challenges identified with accessing services include the appropriateness of care. Individuals seeking services may find general services but a lack of specialization in eating disorders. For example, a family may be able to access a dietitian, but not one who specializes in eating disorder treatment.

Equity Considerations

Equity considerations discussed included culture and diversity within the eating disorder treatment programs, in addition to the barriers to individuals living in rural and remote communities and those without the means to acquire private services. Recognizing eating disorders in different populations is a crucial first step in accessing treatment. Eating disorders exist outside of the stereotypical depiction of an eating disorder, and many advisors described their struggle to be diagnosed and treated appropriately.

Participants described that certain subpopulations can face difficulty in accessing appropriate services. For example, individuals with BED can face stigma, with both family and professionals blaming their weight on

self-control issues. When seeking services for eating disorders, individuals with BED can feel isolated if the services are focused on restrictive disorders and not designed for their needs. One advisor sought group therapy and described feeling like they were other participants' "worst nightmare," as they are overweight. They eventually found support in a virtual support group specifically designed for people with BED.

Priorities for Early Intervention Programs

Priorities for early intervention programs included an approach that emphasized body positivity, body neutrality, and reducing stigma. One advisor suggested delivering therapy services in a nonclinical environment that demedicalized the situation, and giving individuals control over small choices, such as where to sit in a counselling session.

Treatments that were identified as helpful included cognitive behavioural therapy (CBT) facilitated by a mental health professional, family-based treatment (FBT), group therapy sessions, individual peer support, and virtual support networks. It was also suggested by 1 advisor that for some individuals who are unable or not ready to commit to a formal eating disorder protocol, delivering care in a harm-reduction model could be beneficial in the interim. For example, a harm-reduction model might suggest choosing a less harmful laxative or protecting the teeth from the damaging effects of repeated purging until the individual is prepared to proceed with treatment.

Advisors also suggested that the services of the following providers were beneficial: dietitians, mental health professionals like psychologists and psychiatrists, clinicians and nurse practitioners, and a community support person or educator for liaising with and providing education to schools.

Engagement Reporting

Patient engagement is described in Table 1, which provides the Guidance for Reporting Involvement of Patients and the Public 2 Short Form (GRIPP2) revised reporting checklist.[10] The GRIPP2 table includes the outcomes, discussion, and reflection items to outline the process of engagement as well as where and how the advisor's contributions were used in the report.

Table 1: Patient Engagement in Early Intervention Programs for Adolescents and Young Adults With Eating Disorders

Topic	Item	Sections
Aim	Four advisors participated in patient engagement dialogues during the drafting phase of the report to highlight their experiences, perspectives, and priorities for early intervention treatment for adolescents and young adults with eating disorders.	Objective, Key Messages
Methods	After giving informed consent, 4 advisors discussed their perspectives on early intervention programs for adolescents and young adults with eating disorders via 1-hour Zoom calls. We engaged with 2 individuals who had direct experience of an eating disorder, 1 caregiver of a youth with an eating disorder, and 1 front-line clinician who specializes in treating individuals with eating disorders. A fifth participant withdrew due to time constraints. Individuals were selected for diversity, and those who were not selected for an initial dialogue were invited to the group consultation.	Objective, Engagement With Individuals With Lived Experience

Topic	Item	Sections
Results of engagement	People with lived experience of eating disorders contributed thoughts and perspectives on barriers to treatment, equity considerations, and priorities for early intervention programs.	Engagement With Individuals With Lived Experience, Discussion and Conclusions
Discussion and conclusions	Success of engagement in this health technology assessment is related to several factors. First, there were multiple opportunities for people to engage with CADTH, through the initial dialogues during the drafting phase, during the Stakeholder Feedback period, and at the group consultation. Second, the advisors were briefed on the objectives in an introductory call and supported in the engagement process by a Patient Engagement Officer. Third, the project team was receptive to patient involvement and incorporated it in their approach to the literature. Two of the research officers on the project team attended engagement calls to engage participants in conversation. Fourth, an honorarium was offered for advisors' time and expertise as a gesture of appreciation for their contributions. Finally, advisors were offered the opportunity to be thanked by name in the acknowledgements section of the report or to remain anonymous. This allows for recognition while still maintaining the confidentiality for those who preferred to remain anonymous.	NA
	There were limitations to our approach. The timing of the engagements precluded advisor engagement in the protocol development and the method of engagement necessitated access and familiarity with technology. Engaging with a greater number of advisors would have enabled greater diversity. For example, while we had an individual who identifies as nonbinary participate, we did not have any male participants after someone withdrew. Additionally, while advisors had experience receiving treatment for eating disorders, due to the lack of access across Canada, they did not have experience with formal early intervention programs.	Engagement With Individuals With Lived Experience
Critical reflections	The advisors were highly engaged in the consultation, sharing their perspectives, priorities, and lived experiences. Both introductory and engagement calls were scheduled at the participant's convenience. Upon request, participants were sent the questions in advance. Summaries of discussions were sent to the advisors for their feedback and approval. All interested participants, including those who were not selected to participate in dialogues, were advised of the opportunities to engage in both the Stakeholder Feedback and the group consultation. The group consultation involved 3 individuals with lived experience: 2 with direct experience of an eating disorder and 1 caregiver. A fourth individual withdrew due to illness. The participants reviewed the draft report and shared their thoughts on the report content and the language used.	NA

NA = not applicable.

Clinical Effectiveness and Clinical Harms

The research questions that guided the rapid systematic review of the clinical literature were:

1. What is the clinical effectiveness of early intervention programs for the treatment of adolescents and young adults living with an eating disorder?
   a) What are the clinical components of early intervention programs?
   b) How are different patient populations affected by early intervention programs?

c) What components of early intervention programs affect patient specific outcomes?

2. What are the clinical harms of early intervention programs for the treatment of adolescents and young adults living with an eating disorder?
   a) What are the potential harms associated with early intervention programs?
   b) What are the risks involved in early intervention programs for different patient populations?

Quantity of Research Available

We identified 4,781 unique citations via electronic literature search. We excluded 4,556 of these records during title and abstract screening. No additional records were retrieved from the grey literature search. After full-text screening of 225 potentially relevant articles, we excluded 211 records and included 14 publications.[11-24] No additional studies were identified during the stakeholder review of included studies or from subsequent search alerts. Of the included studies, 8 publications were categorized as clinical literature with intentional early intervention programs,[11,12,14,16-18,21,22] while 6 publications were categorized as clinical literature with intervention programs delivered during the early phase of participant illness.[13,15,19,20,23,24] A PRISMA flow chart that shows the study selection process, and a list of excluded studies with reasons for exclusion, are included in the Supporting Information document (refer to *Selection of Included Clinical Studies* and *List of Excluded Publications From Clinical Review and Reasons for Exclusion).*

Study Characteristics

Full details regarding the characteristics of included studies are presented in the Supporting Information document (refer to *Summary of Included Clinical Studies*). Table 2 provides details on the intervention programs included in the studies. During the identification and review of relevant clinical literature, a distinction was made between different types of early intervention programs. These can be characterized as: clinical literature with intentional early intervention programs (i.e., the purpose of the program was to address and deliver eating disorder treatment at the early phase of eating disorder illness) and clinical literature with intervention programs delivered during the early phase of participant illness (i.e., eating disorder treatment programs were delivered during the early phase of eating disorder illness, but early intervention was not the focus of the program). Study characteristics of publications categorized as clinical literature with intentional early intervention programs (hereinafter referred to as early intervention program studies) are presented first,[11,12,14,16-18,21,22] followed by characteristics of publications categorized as clinical literature with intervention programs delivered during the early phase of participant illness (hereinafter referred to as studies with intervention programs at the early phase).[13,15,19,20,23,24] All of the early intervention program studies were nonrandomized studies, with 2 studies being single-arm pre-post observational studies[11,16] and 6 studies using treatment-as-usual historical cohort data for comparative evidence.[12,14,17,18,21,22] Two of the included studies with intervention programs at the early phase were from a randomized controlled trial (RCT) that assessed systematic family therapy (FT) compared to treatment as usual (TAU);[13,24] however, 1 of the studies[13] was a long-term follow-up analysis of the other study.[24] Four of the included studies with intervention programs at the early phase were single-arm pre-post observational studies.[15,19,20,23] Included studies provided no distinction between sex and gender, and may have used reductive categories for collecting race or ethnicity data when reporting on the study population. While we have retained the original

language used when reporting on these studies, we acknowledge that such language is not inclusive of trans and nonbinary persons and may not be representative of all persons included in the studies.

Table 2: Characteristics of Early Intervention Programs

Citation(s)	Program name	Setting and location	Entry criteria	Program details
Early intervention program studies				
Richards et al. (2023)[11] Austin et al. (2022)[12] Richards et al. (2021)[17] Flynn et al. (2020)[14] Fukutomi et al. (2019)[18] McClelland et al. (2018)[22] Brown et al. (2016)[21]	FREED service model	Various ED services operated by the NHS in the UK	Participants aged 16 to 25 years who had a primary diagnosis of ED and < 3 years of duration of illness	Services aimed to offer participants with ED early assessment and treatment according to prespecified wait time targets in tandem with treatment considered to be evidence-based (e.g., CBT, Maudsley AN treatment for adults) with tailoring to participant developmental needs and early-stage illness
Radunz et al. (2021)[16]	Emerge-ED	Services offered through the Headspace not-for-profit organization, which provides free mental health services to young people across Australia	Participants (self-referred or referred by general practitioner) aged 16 to 25 years displaying ED symptoms for < 3 years and BMI measurement of > 14.5 kg/m^2	Service modelled after FREED, which offers rapid engagement with young people and their families through assessment and tailored treatment to individual needs (typically CBT as main treatment)
Studies of intervention programs at the early phase				
Godart et al. (2022)[13] Godart et al. (2012)[24]	Family therapy	Hospital inpatient setting for AN in Paris, France	Females aged 13 to 21 years with a diagnosis of AN (younger than 19 years at illness onset) and duration of < 3 years of illness, hospitalized in inpatient unit for AN, living in Paris, and who had never received family therapy	Family therapy was included in a multidimensional outpatient care program with aims to develop therapeutic alliance, identify individual and intergenerational boundaries, promote family support, manage conflict, enable resilience, restore family identity, and develop autonomy
Herpertz-Dahlmann et al. (2021)[15]	Home treatment	Outpatient setting in Germany	Individuals with a diagnosis of AN or atypical AN according to *DSM-5*, aged 12 to 18 years, in their first or second admission for AN, living with at least 1 carer within a 60-minute commute	Home-based treatment (offered after a short inpatient treatment stay) that included an individualized treatment plan and multidisciplinary methods of therapy delivery, including parental management of food intake,

Citation(s)	Program name	Setting and location	Entry criteria	Program details
				social rehabilitation, and autonomy of participant
Coelho et al. (2019)[19]	FBT	Outpatient ED Program at British Columbia Children's Hospital in Vancouver, Canada	Admitted with a diagnosis of AN or OSFED between January 1, 2010, and January 15, 2016	FBT provided regular sessions with a multidisciplinary team with the aim of developing collaborative goals focused on weight restoration, normalization of eating, and medical stabilization
Hurst et al. (2019)[20]	FBT in combination with CBT for perfectionism	Specialist outpatient child and adolescent ED service in Australia	Females aged 12 to 17 years, from an urban area, diagnosed with AN, and an illness duration of < 3 years	FBT was offered in a phased approach, which targeted weight restoration and healthy eating behaviours with the aim of progressing to steady weight gain and eating autonomy; CBT for perfectionism was offered after completion of phase I FBT and in tandem with phase II FBT
Rosling et al. (2016)[23]	FBT	ED unit in Uppsala County, Sweden	Adolescent girls aged 10 to 17.9 years from Uppsala County who were referred to assessment to the Eating Disorder Unit	Four steps involved in program treatment included stopping weight loss and re-establishing healthy eating behaviours, restoring weight at a rate of 0.5 kg to 1 kg per week, gradual reintroduction into social contexts, and establishing daily routines and relapse prevention; consensus on recovery is reached between participants, parents, and therapists

AN = anorexia; BMI = body mass index; CBT = cognitive behavioural therapy; ED = eating disorder; FBT = family-based treatment; FREED = First Episode and Rapid Early Intervention in Eating Disorder; NHS = National Health Service; OSFED = other specified or unspecified eating disorder.

Populations

Early Intervention Program Studies

Seven studies used data from participants who were included in the First Episode and Rapid Early Intervention in Eating Disorder (FREED) service model, which was offered through various National Health Service eating disorder programs in the UK.[11,12,14,17,18,21,22] One FREED-based study used data from the most recent cohort of participants, which was referred to as the FREED-4-All cohort, as well as a previous cohort, which was extracted from the FREED-Up study cohort.[11] Three of the FREED-based studies used data from participants included in the FREED-Up study cohort.[12,14,17] Two FREED-based studies used data from participants who were included in a FREED pilot study.[18,22] One FREED-based study used unique data from

FREED participants.[21] For all FREED cohorts, the primary eating disorder diagnosis was anorexia nervosa (AN) followed by bulimia nervosa (BN), other specified or unspecified feeding and eating disorder (OSFED), and BED.[11,12,14,17,18,21,22] In addition, across all FREED cohorts, the participants included in the analyses were predominantly white females.[11,12,14,17,18,21,22]

One single-arm nonrandomized study included participants in the Emerge-ED program from 2 mental health services offered in low socioeconomic status (SES) areas in South Australia.[16] The majority of participants included in the analysis were female (approximately 92%); however, no additional demographic information was reported.[16]

Studies with Intervention Programs at the Early Phase

Participant data from 1 RCT were used to provide analyses for 2 included studies.[13,24] All included participants were females, with a mean age of 16.6 years at study inclusion.[13,24] No additional demographic information was provided. One nonrandomized study included female participants with a restrictive AN subtype, and the majority of participants had at least 1 psychiatric comorbidity.[15] One single-arm nonrandomized study included participants admitted to FBT with a diagnosis of AN or OSFED.[19] The mean age of participants was 14.6 years, and the majority of participants were white females with a restrictive eating disorder subtype.[19] One single-arm nonrandomized study included participants with a diagnosis of AN who were referred to a specialist child and adolescent eating disorder service.[20] One single-arm nonrandomized study included adolescent females from Uppsala County, Sweden who were referred to the eating disorder unit.[23] Only participants included in the AN cohort (n = 31) were within scope for this review. The duration of illness for these participants ranged from less than 1 month to 32 months.[23]

Interventions and Comparators

An overview of the intervention programs used in the included studies is provided in Table 2.

Early Intervention Program Studies

The FREED service model was used in 7 of the included early intervention program studies. Generally, the FREED service model offers people living with eating disorders early assessment and access to treatment with adherence to prespecified wait time targets.[11,12,14,17,18,21,22] This service is offered in a collaborative approach with evidence-based treatment (e.g., CBT, Maudsley treatment for AN), which is tailored to participant developmental needs and early-stage illness.[11,12,14,17,18,21,22] Analysis from 1 FREED-based study used 2 FREED cohorts to assess the change in various outcomes at different time points.[11] Six of the FREED-based studies compared various FREED cohorts to a retrospective cohort of people with eating disorders who received TAU offered by the same eating disorder services 2 years before the implementation of FREED.[12,14,17,18,21,22] One single-arm nonrandomized early intervention program study assessed participants in the Emerge-ED program (described in Table 2) at the beginning and end of treatment.[16]

Studies With Intervention Programs at the Early Phase

Two studies based on an RCT assessed the inclusion of a systematic FT in combination with a multidisciplinary outpatient care program compared to a TAU outpatient care program.[13,24] One nonrandomized study assessed participants who entered into a home-based treatment (HoT) program

after receiving inpatient treatment.[15] The HoT program included an individualized treatment plan and multidisciplinary methods of therapy delivery, and the study assessed the change in outcomes at the start of treatment, end of treatment, and 1-year follow-up, comparing HoT and non-HoT participants across categorical variables.[15] One single-arm nonrandomized study assessed the change in outcomes from beginning to end of treatment for an FBT program, which provided participants and families with regular medical monitoring sessions with family-based therapists, pediatricians, and clinical nurses.[19] One single-arm nonrandomized study assessed the change in outcomes at various phases of a treatment program that offered FBT in combination with CBT focusing on perfectionism (CBT-P).[20] One single-arm nonrandomized study assessed the change in outcomes from beginning of treatment to 1-year follow-up for an FBT outpatient program.[23]

Outcomes

An overview of the outcome measurements with respective outcome domains is presented in the Supplemental Information document (refer to *Summary of Outcome Measurements*). The following outcome domains were identified for the early intervention program studies and studies with intervention programs at the early phase:

- eating disorder symptomology outcomes (measured using Eating Disorder Examination Questionnaire [EDE-Q] scores, change in symptoms measured using the ED-15 questionnaire, behavioural symptoms [i.e., bingeing episodes, purging episodes, laxative use, and excessive exercise], duration of eating disorder onset to specialist contact [DUSC] and duration of untreated eating disorder [DUED], and AN symptom remission)
- body mass index (BMI)–related outcomes (measured using change in BMI score, expected body weight [EBW], participant menstruation status, menstrual function measured using the Morgan-Russel Outcome Assessment Schedule [MROAS] or Morgan and Russel Outcome Categories [MROC])
- psychological impact outcomes (measured using the Clinical Outcomes in Routine Evaluation-10/Outcome Measure [CORE-10/OM] scale or Symptom Check List 90-Revised [SCL-90-R] tool, psychological impact due to eating disorder measured using the Clinical Impairment Assessment [CIA] score, Depression, Anxiety and Stress Scale-21 [DASS-21], Level of Expressed Emotion [LEE], Psychological Outcome Profile [PSYCHLOPS] scale, Beck Depression Inventory-II [BDI-II] tool, and Child and Adolescent Perfectionism Scale [CAPS])
- social outcomes (measured using Work and Social Adjustment Scale [WSAS], school attendance, and Social Adjustment Scale [SAS] scores)
- health care utilization (measured using wait time adherence and various treatment uptake or satisfaction measures).

Studies with interventions programs at the early phase also presented global functioning outcomes (measured using quality of life measures and Global Outcome Assessment Schedule [GOAS] or MROAS measures).

We conducted a literature search for any information on minimally important differences (MIDs) for the outcome measurements to inform our understanding of clinical relevance of the findings of this report.

MIDs were identified for EDE-Q, CORE-OM, and SCL-90-R, and the details are presented in the Supplemental Information document (refer to *Summary of Outcome Measurements*). In summary, only the MID information on EDE-Q from 3 studies[25-27] was deemed relevant to this review, with a score that is within or above the range of ≥ 2.17 to 3.19 being considered a clinically meaningful change in behaviours associated with ED.

Critical Appraisal

Full details of the risk of bias assessments are presented in the Supporting Information document (refer to *Critical Appraisal of Included Clinical Studies*). Overall, each included study exhibited a serious risk of bias for studies assessed using the ROBINS-I, or high risk of bias for studies assessed using the ROB 2, for the overall outcome risk of bias rating.

Risk of Bias in Early Intervention Program Studies

Each risk of bias domain within the early intervention program studies was assessed using the ROBINS-I tool.[11,12,14,16-18,21,22]

All overall risk of bias ratings were assessed to be serious primarily due to bias arising due to confounding.[11,12,14,16-18,21,22] None of the included early intervention program studies controlled for potential confounding factors in intervention groups or comparative groups when applicable, causing serious risk of bias concerns for outcomes because authors did not adjust their analyses for potential confounders despite the lack of randomization in their studies. Most of the included studies exhibited a moderate risk of bias for participant selection into the study, but this was primarily due to the selection of participants not being based on characteristics observed after the start of the intervention (i.e., participant selection was determined before the start of the intervention).[11,12,14,17,18,21,22] Most studies exhibited a low to moderate risk of bias for classification of intervention, primarily due to the analysis being the comparison of a prospective cohort of participants involved in FREED to a historical cohort of TAU participants; therefore, it is unlikely that study findings would be impacted by misclassification.[12,14,17,18,21,22] Two studies exhibited a serious risk of bias for participant classification because 1 study may have been impacted by potential cohort overlap, but no details were provided to address this concern.[11] The other study only had 1 intervention cohort; therefore, study findings would be biased for those involved in the intervention.[16] Each included study exhibited low to moderate risk of bias due to deviations from the intended intervention; however, this was primarily due to the type of analysis conducted between the intervention cohort and historical TAU cohorts, or due to only 1 intervention cohort included in the study. It was therefore unlikely that study findings would be impacted by deviations from the intended intervention.[11,12,14,16-18,21,22] Five included studies exhibited serious risk of bias due to missing data, primarily through significant amounts of missing participant data at follow-up and a lack of detail related to how missing data were handled in the analysis, thus likely impacting study findings.[11,14,16,21,22] Four included studies exhibited serious risk of bias in measurements of outcomes primarily due to the way in which outcomes were assessed either through multiple methods of data analysis or by analyzing data prospectively for the intervention cohort and retrospectively for the comparative cohort.[14,16,21,22] Seven of the included studies, which were all based on the FREED service model, exhibited moderate risk of bias in the selection of reported results, primarily based on when participants' outcome data were assessed (i.e., prospectively collected data were collected at certain time points, but collection was based on the

individuals' treatment pathways, which may not be uniform across all participants).[11,12,14,17,18,21,22] One included study exhibited serious risk of bias for the selection of reported results, primarily through the use of linear and quadratic methods of analysis for some but not all outcomes, without providing any justification for the differences in methods.[16] Two of the included studies were deemed to have an overall direction of risk of bias that favoured the intervention group; however, this was due to the type of analysis being single-arm and noncomparative for intervention groups.[11,16] The direction of bias was deemed unpredictable for 6 of the other studies, which may impact the ability to properly interpret findings and presented challenges in determining the true measures of effect for each study.[12,14,17,18,21,22]

Risk of Bias in Studies With Intervention Programs at the Early Phase

Each risk of bias domain within the studies with intervention programs at the early phase of illness was assessed using the ROB 2 tools for the RCT with 2 studies,[13,24] and the ROBINS-I tool for nonrandomized studies.[15,19,20,23]

For the 1 RCT with 2 studies, bias due to the randomization process, bias due to deviations from the intended intervention, bias due to missing outcome data, and bias in measurements of outcomes exhibited some concerns for risk of bias impacting outcomes.[13,24] Bias due to the selection of reported results was deemed high for both studies, primarily due to variation in the multiple measurement scales used and potential attrition at follow-up analyses impacting outcome measurements.[13,24] The overall rating for risk of bias was high for both studies, primarily due to lack of blinding for participants and investigators and potential variation in time point assessment for participants.[13,24] The direction of bias was deemed unpredictable for the RCT with 2 studies, thus impacting the ability to properly interpret findings and determine the true measures of effect from each study.[13,24]

For the nonrandomized studies, overall risk of bias ratings for each study were assessed to be serious, primarily due to confounding.[15,19,20,23] None of the included studies controlled for potential confounding factors in the intervention groups, causing serious risk of bias concerns for study findings because authors did not adjust their analyses for potential confounders, despite the lack of randomization in their studies. Other risk of bias domains that contributed to the overall serious risk of bias for each nonrandomized study included the selection of participants into the studies and the classification of interventions (i.e., analysis of single-arm noncomparative data) and selection of reported results (i.e., selective outcome reporting).[15,19,20,23] Each included study was deemed to have an overall direction of risk of bias that favoured the intervention group; however, this was due to the type of analysis being primarily single-arm and noncomparative for the intervention groups.[15,19,20,23]

Findings

A detailed overview of the main study findings is presented in the Supplemental Information document (refer to *Detailed Findings for Early Intervention Studies* and *Detailed Findings of Intervention Programs at the Early Phase*).

Question 1: Clinical Effectiveness

In this section, we present the findings for all of the outcomes on the clinical effectiveness of early intervention programs for the treatment of adolescents and young adults living with eating disorders. Findings from the early intervention program studies are presented first, followed by findings from studies of intervention programs at the early phase of illness. It should be noted that each included study exhibited serious or high risk of bias for outcomes assessed within the respective studies, and readers should be mindful when interpreting the results that the true effect of early intervention programs may not be consistent with the findings generated from the included studies. In addition, only extractable data from the included studies that were deemed relevant to the analysis of this review are included in the findings. Because of this, findings from the included studies should only be interpreted within the context of each study itself and may not be entirely representative of all populations who are impacted or living with eating disorder conditions. Where appropriate, additional context may be provided for populations of interest, but generally the majority of populations included in these studies were white females with access to treatment.

Early Intervention Program Studies

Eating Disorder Symptomology Outcomes

EDE-Q scores: Four studies assessed eating disorder symptomology through changes in EDE-Q scores at various time points of the intervention.[11,12,16,22]

All 4 studies reported a decrease in EDE-Q from baseline to posttreatment:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean decrease in EDE-Q of 2.02 ($P < 0.001$) during an unspecified period.[11]
- Participants enrolled in the FREED-Up program were estimated to experience a mean decrease in EDE-Q of 1.23 ($P < 0.001$) and 1.77 ($P < 0.001$) at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program were estimated to experience a mean decrease in EDE-Q of 0.92 ($P < 0.001$), 0.34 ($P < 0.001$), and 0.49 ($P < 0.001$) at the 3-month, 6-month, and 12-month follow-up, respectively.[12]
- A FREED-based study reported a mean decrease in EDE-Q of 0.82 ($P = 0.001$), 1.55 ($P = 0.001$), and 2.08 ($P = 0.001$) at the 3-month, 6-month, and 12-month follow-up, respectively, and a mean decrease of 0.53 ($P = 0.03$) between 6 months and 12 months.[22]
- A single-arm noncomparative study reported a mean decrease in EDE-Q from 4.25 to 1.87 during an unspecified period.[16]

Eating disorder cognition: One single-arm noncomparative study reported on the change of eating disorder cognition as eating disorder symptomology assessed from 1 outcome domain using the ED-15 questionnaire.

- The study reported a decrease in eating disorder cognition outcomes using linear (−0.022 [$P < 0.001$]) and quadratic (0.00006 [$P < 0.001$]) trend models across days since treatment commencement (0 to 70 days).[16]

Binge episodes: Three studies assessed outcomes associated with binge episodes for eating disorder symptomology.[11,12,16] Two FREED-based studies assessed the mean difference in number of binge episodes at various time points.[11,12]

All 3 studies reported a decrease in binge episodes from baseline to posttreatment:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean decrease of 2.64 ($P < 0.001$) binge episodes per month during an unspecified period.[11]
- Participants enrolled in the FREED-Up program were estimated to experience a mean decrease of 1.23 ($P < 0.001$) and 1.77 ($P < 0.001$) binge episodes per month at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program who were diagnosed with BN, BED, or OSFED were estimated to experience a mean decrease of 5.53 ($P < 0.001$) and 8.29 ($P < 0.001$) binge episodes at the 3-month and 12-month follow-up, respectively.[12]
- In addition, participants enrolled in the FREED program were estimated to experience a mean decrease of 0.19 ($P = 0.84$) and 2.56 ($P = 0.13$) binge episodes at 3 to 6 months and 6 to 12 months, respectively.[12]
- A single-arm noncomparative study reported a mean decrease in binge-eating behaviour using linear (−0.02 [$P < 0.001$]) and quadratic (0.00009 [$P < 0.001$]) trend models across days since treatment commencement (0 to 70 days).[16]

Purging episodes: Three studies assessed outcomes associated with purging episodes for eating disorder symptomology.[11,12,16] Two FREED-based studies assessed the mean difference in number of purging episodes at various time points.[11,12]

All 3 studies reported a decrease in purging episodes from baseline to posttreatment:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean decrease of 4.41 ($P < 0.001$) purging episodes per month during an unspecified period.[11]
- Participants enrolled in the FREED-Up study were estimated to experience a mean decrease of 3.70 ($P < 0.001$) and 4.79 ($P < 0.001$) purging episodes per month at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program who were diagnosed with BN, BED, or OSFED were estimated to experience a mean decrease of 6.51 ($P < 0.001$) and 10.13 ($P < 0.001$) purging episodes at the 3-month and 12-month follow-up, respectively.[12]
- In addition, participants enrolled in the FREED program were estimated to experience a mean decrease of 0.76 ($P = 0.47$) and 2.86 ($P = 0.014$) purging episodes at 3 to 6 months and 6 to 12 months, respectively.[12]
- A single-arm noncomparative study reported a mean decrease in purging behaviour using linear (−0.008 [$P = 0.008$]) and quadratic (0.00005 [$P = 0.02$]) trend models across days since treatment commencement (0 to 70 days).[16]

Laxative use: Three studies assessed outcomes associated with laxative use for eating disorder symptomology.[11,12,16] Two FREED-based studies assessed the mean difference in number of laxative use episodes at various time points.[11,12]

All 3 studies reported a trend toward a decrease in laxative use from baseline to posttreatment:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean decrease of 0.84 laxative use episodes per month during an unspecified period.[11]
- Participants enrolled in the FREED-Up program were estimated to experience a mean decrease of 0.90 ($P < 0.05$) and 1.48 ($P < 0.001$) laxative use episodes per month at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program who were diagnosed with BN, BED, or OSFED were estimated to experience a mean decrease of 5.66 ($P < 0.001$) and 9.26 ($P < 0.001$) laxative use episodes at the 3-month and 12-month follow-up, respectively.[12]
- In addition, participants enrolled in the FREED program were estimated to experience a mean decrease of 1.05 ($P = 0.5$) and 2.55 ($P = 1.00$) laxative use episodes at 3 to 6 months and 6 to 12 months, respectively.[12]
- A single-arm noncomparative study reported a decrease in laxative use behaviour using linear (0.004 [$P = 0.86$]) and quadratic (0.000001 [$P = 0.92$]) trend models across days since treatment commencement (0 to 70 days).[16]

Excessive exercise: Two studies assessed outcomes associated with excessive exercise for eating disorder symptomology.[12,16] Both studies reported a decrease in excessive exercise behaviour (undefined) from baseline to posttreatment:

- Participants enrolled in the FREED program who were diagnosed with BN, BED, or OSFED were estimated to experience a mean decrease of 6.10 ($P < 0.001$) and 8.95 ($P < 0.001$) in excessive exercise episodes at the 3-month and 12-month follow-up, respectively.[12]
- In addition, participants enrolled in the FREED program were estimated to experience a mean decrease of 2.22 ($P = 0.007$) and 0.63 ($P = 0.48$) excessive exercise episodes at 3 to 6 months and 6 to 12 months, respectively.[12]
- A single-arm noncomparative study reported a decrease in excessive exercise behaviour using linear (−0.013 [$P < 0.001$]) and quadratic (0.00003 [$P = 0.03$]) trend models across days since treatment commencement (0 to 70 days).[16]

Restrictive dieting: One single-arm noncomparative study reported on the change of restrictive dieting behaviour for eating disorder symptomology as assessed from 1 outcome domain using the ED-15 questionnaire.

- The study reported a decrease in restrictive dieting behaviour outcomes using linear (−0.24 [$P < 0.001$]) and quadratic (0.00007 [$P = 0.01$]) trend models across days since treatment commencement (0 to 70 days).[16]

DUSC: Two FREED-based studies assessed DUSC in months, for participants included in the FREED intervention cohort compared to a retrospective TAU cohort for eating disorder symptomology.[14,21] One study reported mixed results for mean DUSC in the FREED cohort compared to the TAU cohort, while the other study reported a lower mean DUSC in the FREED cohort compared to the TAU cohort:

- Participants enrolled in the FREED program were estimated to experience a mean DUSC of 16.82 months compared to a mean DUSC of 16.47 months for the TAU cohort (P = 0.71), while participants in the FREED cohort under optimal conditions were estimated to experience a mean DUSC of 15.11 months (P = 0.200 compared to TAU).[14]
- Participants enrolled in the FREED program were estimated to experience a mean DUSC of 15.67 months compared to a mean DUSC of 16.16 months for the TAU cohort.[21]

DUED: Two FREED-based studies assessed DUED in months, for participants included in the FREED intervention cohort compared to a retrospective TAU cohort for eating disorder symptomology.[14,21] Both studies reported a lower DUED for participants enrolled in the FREED program compared to the TAU cohort:

- Participants enrolled in the FREED program were estimated to experience a mean DUED of 17.82 months compared to a mean DUED of 19.98 months for the TAU cohort (P < 0.05), while participants in the FREED cohort under optimal conditions were estimated to experience a mean DUED of 15.95 months (P < 0.001 compared to TAU).[14]
- Participants enrolled in the FREED program were estimated to experience a mean DUED of 16.39 months compared to a mean DUSC of 19.09 months for the TAU cohort.[21]

BMI Outcomes

BMI Score

Five studies assessed changes in BMI scores (kg/m^2) at various time points,[11,12,16,18,22] and 3 studies assessed the proportion of participants that were considered "weight recovered" as per BMI measure.[11,12,18] "Weight recovered" was assessed to describe a participant reporting a BMI score greater than 18.5 kg/m^2 in later adolescent and young adult populations (i.e., those aged 16 to 25 years).

All 5 studies reported an increase in BMI scores from baseline to posttreatment, and BMI scores were higher in the FREED cohort compared to the TAU cohort:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean increase in BMI of 1.67 (P < 0.001) during an unspecified period.[11]
- Participants enrolled in the FREED-Up program were estimated to experience a mean increase in BMI of 1.25 (P < 0.001) and 2.01 (P < 0.001) at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program were estimated to have a higher overall mean BMI, with a difference of 1.32 (95% confidence interval [CI], 0.63 to 2.02) compared to the TAU cohort, and reported a greater mean BMI increase as well (2.09 [95% CI, 1.66 to 2.53] compared to 1.22 [95% CI, 0.59 to 1.86]).[12]
- Participants enrolled in the FREED program were estimated to have a higher overall mean BMI, with a difference of 1.1 (95% CI, −0.44 to 2.66) compared to the TAU cohort at posttreatment, and reported a

greater mean BMI increase at posttreatment as well (2.7 [95% CI, 1.57 to 3.85] compared to 1.9 [95% CI, 0.75 to 3.14]).[18]

- A FREED-based study reported a mean increase in BMI of 0.16 (P = 1.00), 0.69 (P = 0.064), and 1.20 (P = 0.004) at the 3-month, 6-month, and 12-month follow-up, respectively, and 0.51 (P = 0.229) between 6 and 12 months.[22]
- A single-arm noncomparative study reported a mean increase in BMI from 22.14 to 23.11 (P < 0.001) during an unspecified period.[16]

All 3 studies reported an increase in the proportion of participants with AN who were considered "weight recovered" from baseline to posttreatment, and there was a greater proportion of "weight recovered" participants in the FREED program than in the TAU cohort:

- Among participants enrolled in the FREED-4-All program, the proportion of participants whose weight recovered increased from 22% to 59% during an unspecified period.[11]
- Among participants enrolled in the FREED-Up program, the proportion of participants whose weight recovered increased from 0% at baseline to 33% and 52% at the 6-month and 12-month follow-up, respectively.[11]
- When compared to the TAU cohort, participants enrolled in the FREED program were estimated to have a lower proportion of weight recovery at baseline (4.35% versus 6.4%) but were estimated to have a higher proportion of weight recovery at 3-months (17.1% versus 13.6%), 6-months (33.7% versus 14.5% [P = 0.011]), and 12-months follow-up (53.2% versus 17.9% [P < 0.001]).[12]
- When compared to TAU, participants enrolled in the FREED program were estimated to have a higher proportion of weight recovery between 12 and 24-months follow-up (71% versus 22% [P = 0.02]) and a higher proportion of weight recovery across all time points (59% versus 21% [P = 0.003]).[18]

Psychological Impact Outcomes

Psychosocial Distress

Three FREED-based studies assessed psychosocial distress outcomes for psychological impact through change in CORE-10/OM measurements.[11,12,22]

All 3 studies reported a decrease in psychosocial distress outcomes from baseline to posttreatment:

- Participants enrolled in the FREED-4-All program were estimated to experience a mean decrease in CORE-10/OM score of 0.51 (P < 0.001) during an unspecified period.[11]
- Participants enrolled in the FREED-Up program were estimated to experience a mean decrease in CORE-10/OM score of 0.52 (P < 0.001) and 0.58 (P < 0.001) at the 6-month and 12-month follow-up, respectively.[11]
- Participants enrolled in the FREED program were estimated to experience a mean decrease in CORE-10/OM score of 2.59 (P < 0.001) and 6.02 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 2.49 (P < 0.001) and 0.94 (P = 0.014) at 3 to 6 months and 6 to 12 months, respectively.[12]

- A FREED-based study reported a mean decrease in CORE-10 of 3.61 (P = 0.019), 5.57 (P = 0.002), and 5.43 (P = 0.002) at the 3-month, 6-month, and 12-month follow-up, respectively, and 0.13 (P = 1.00) between 6 and 12 months.[22]

Psychological Impact Due to Eating Disorder

Three studies assessed psychological impact due to eating disorders through change in CIA measurements for psychological impact.[12,16,22]

All 3 studies reported a decrease in psychological impact due to eating disorders from baseline to posttreatment:

- Participants enrolled in the FREED program were estimated to experience a mean decrease in CIA score of 5.35 (P < 0.001) and 13.35 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 3.85 (P < 0.001) and 4.26 (P < 0.001) at 3 to 6 months and 6 to 12 months, respectively.[12]
- A FREED-based study reported a mean decrease in CIA score of 0.18 (P = 0.102), 0.66 (P = 0.001), and 0.98 (P = 0.001) at the 3-month, 6-month, and 12-month follow-up, respectively, and 0.33 (P = 0.053) between 6 and 12 months.
- A single-arm noncomparative study reported a mean decrease in CIA score from 35.23 to 14.53 (P < 0.001) during an unspecified period.[16]

Depression, Anxiety, and Stress

Three studies assessed eating disorder–related depression, anxiety, and stress through change in DASS-21 measurements for psychological impact.[12,16,22]

All 3 studies reported a decrease in ED related depression, anxiety, and stress from baseline to posttreatment:

- Participants enrolled in the FREED program were estimated to experience a mean decrease in DASS-21 score of 5.06 (P < 0.001) and 11.07 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 3.54 (P < 0.001) and 3.10 (P < 0.001) at 3 to 6 months and 6 to 12 months, respectively.[12]
- A FREED-based study reported a mean decrease in DASS-21 score of 9.09 (P = 0.001), 12.21 (P = 0.001), and 12.33 (P = 0.001) at the 3-month, 6-month, and 12-month follow-up, respectively, and 0.12 (P = 1.00) between 6 and 12 months.[22]
- A single-arm noncomparative study reported a mean decrease from 1.94 to 0.82 (P < 0.001) for depression scores, 1.62 to 0.90 (P < 0.001) for anxiety scores, and 1.94 to 1.18 (P < 0.001) for stress scores during a unspecified period.[16]

Expressed Emotion

Two studies assessed expressed emotion through change in LEE measurements for psychological impact.[12,22]

Both studies reported a decrease in expressed emotion from baseline to posttreatment:

- Participants enrolled in the FREED program were estimated to experience a mean decrease in LEE score of 2.38 (P < 0.001) and 4.02 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 0.77 (P = 0.28) and 0.87 (P = 0.25) at 3 to 6 months and 6 to 12 months, respectively.[12]
- A FREED-based study reported a mean decrease in LEE score of 1.45 (P = 1.00), 3.52 (P = 0.088), and 3.86 (P = 0.102) at the 3-month, 6-month, and 12-month follow-up, respectively, and 0.34 (P = 1.00) between 6 and 12 months.[22]

Function and Well-Being

One study assessed participant function and well-being through change in PSYCHLOPS score for psychological impact.[12]

Results from the study reported an improvement in function and well-being from baseline to posttreatment:

- Participants enrolled in the FREED program were estimated to experience a mean decrease in PSYCHLOPS score of 3.79 (P < 0.001) and 6.92 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 1.42 (P = 0.28) and 1.71 (P < 0.001) at 3 to 6 months and 6 to 12 months, respectively.[12]

Social Outcomes

Work and Social Adjustment

Two studies assessed participant work and social adjustment outcomes through change in WSAS measurements for social outcomes.[12,22]

Both studies reported an improvement in work and social adjustment outcomes from baseline to posttreatment:

- Participants enrolled in the FREED program were estimated to experience a mean decrease in WSAS score of 3.14 (P < 0.001) and 8.15 (P < 0.001) at the 3-month and 12-month follow-up, respectively, and a mean decrease of 2.94 (P = 0.28) and 2.07 (P = 0.25) at 3 to 6 months and 6 to 12 months, respectively.[12]
- A FREED-based study reported a mean decrease in WSAS score of 2.87 (P = 0.354), 7.16 (P = 0.001), and 10.21 (P = 0.001) at the 3-month, 6-month, and 12-month follow-up, respectively, and 3.04 (P = 0.541) between 6 and 12 months.[22]

Health Care Utilization

Wait Times

Four FREED-based studies provided findings related to participant wait times for key milestones in participant access to treatment (e.g., engagement call, assessment, treatment).[14,17,21,22] The FREED service model provides wait time targets to ensure early intervention to treatment. These wait time targets are as follows: less than 48 hours for an engagement call with the potential participant; an eating disorder

assessment offered and completed less than 2 weeks from the engagement call; and eating disorder treatment offered and started less than 4 weeks after completion of the assessment.[11]

One study reported results related to FREED wait time adherence:

- 89% of all FREED-Up participants, and 90% of FREED-Up participants diagnosed under optimal conditions, were estimated to experience an attempted engagement call in less than 48 hours, while 50% and 48% were estimated to receive an engagement call in less than 48 hours, respectively.[17]
- 51% of all FREED-Up participants, and 59% of FREED-Up participants diagnosed under optimal conditions, were estimated to be offered an assessment in less than 2 weeks, while 43% and 50% were estimated to receive an assessment in less than 2 weeks, respectively.[17]
- 33% of all FREED-Up participants, and 36% of FREED-Up participants diagnosed under optimal conditions, were estimated to be offered treatment in less than 4 weeks, while 23% and 28% were estimated to receive treatment in less than 4 weeks, respectively.[17]

Three studies reported lower overall wait times to assessment and treatment for participants enrolled in the FREED program compared to TAU cohorts:

- Participants enrolled in the FREED program were estimated to experience a lower mean wait time of 3.58 weeks versus 6.72 weeks to assessment ($P < 0.001$) and 8.06 weeks versus 20.76 weeks to treatment ($P < 0.001$), compared to a TAU cohort.[14]
- Participants enrolled in the FREED program were estimated to experience a lower median wait time of 42.5 days versus 62 days to assessment ($P = 0.084$), and 20 days versus 34 days to treatment ($P < 0.001$), compared to a TAU cohort.[22]
- Participants enrolled in the FREED program were estimated to experience a lower mean wait time of 6.44 weeks versus 9.94 weeks to assessment ($P < 0.001$), 9.59 weeks versus 19.97 weeks to treatment ($P < 0.001$), and 3.16 weeks versus 10.07 weeks from assessment to treatment ($P < 0.001$), compared to a TAU cohort.[21]

Service Use

Five FREED-based studies provided outcomes related to program service use.[12,14,18,21,22]

Two studies reported that a larger proportion, or the same proportion, of participants enrolled in the FREED program completed treatment compared to the TAU cohort:

- 70% of participants enrolled in the FREED program were estimated to complete treatment, versus 65.6% of participants in the TAU cohort ($P = 0.35$).[12]
- 71% of participants were estimated to complete treatment in both the FREED cohort and TAU cohort.[22]

Three studies reported a higher number of treatment sessions attended for participants enrolled in the FREED program compared to TAU cohorts:

- Participants enrolled in the FREED program were estimated to have a higher mean number of treatment sessions attended, at 18.64 sessions versus 16.67 sessions for the TAU cohort (P = 0.16).[12]
- Participants with AN enrolled in the FREED program were estimated to have a higher mean number of treatment sessions attended, at 30.5 sessions versus 20.5 sessions for the TAU cohort with AN.[18]
- Participants enrolled in the FREED program were estimated to have a higher median number of treatment sessions attended, at 21.5 sessions versus 16 sessions for the TAU cohort.[22]

Three studies reported a lower proportion of participants enrolled in the FREED program who required additional intensive treatment compared to TAU cohorts:

- 6.6% of participants enrolled in the FREED program required additional intensive treatment compared to 12.4% for the TAU cohort (P = 0.037).[12]
- In addition, the participants enrolled in the FREED program who required additional intensive treatment were estimated to have a lower mean number of days in treatment compared to TAU participants, at 7.03 days versus 17.93 days (P = 0.02).[12]
- 23% of participants with AN enrolled in the FREED program required additional intensive treatment compared to 32% of the TAU cohort (P = 0.54).[18]
- 8.9% of participants enrolled in the FREED program required additional intensive treatment compared to 14.1% of the TAU cohort (P = 0.999).[22]

Three studies reported a higher proportion of participants enrolled in the FREED program took up treatment after assessment compared to TAU cohorts:

- 97.84% of participants enrolled in the FREED program were estimated to take up treatment after assessment versus 71.43% for the TAU cohort (P < 0.001).[14]
- 100% of participants enrolled in the FREED program were estimated to take up treatment after assessment versus 74% for the TAU cohort (P < 0.001).[22]
- 100% of participants enrolled in the FREED program were estimated to take up treatment after assessment versus 73% for the TAU cohort (P < 0.001).[21]

Studies With Intervention Programs at the Early Phase

Eating Disorder Symptomology

Eating Disorder Inventory (EDI) scores: Findings from 1 study based on an RCT[13] and 2 single-arm nonrandomized studies[15,20] reported on eating disorder symptomology measured using EDI results.

All 3 studies reported that eating disorder symptomology was lower among those enrolled in the intervention program compared to the TAU cohort, or decreased from baseline to posttreatment:

- Participants enrolled in FT were estimated to experience a lower mean EDI score of 47.2 versus 48.3 for the TAU cohort (P = 0.860).[13]

- Participants enrolled in HoT were estimated to experience a mean decrease in EDI score from 280.68 at admission to 222.43 (P = 0.005) at the 1-year follow-up.[15]
- Participants enrolled in FBT and carried onto CBT-P were estimated to experience a mean decrease in EDI score from 56.2 at FBT commencement to 41.7 (P < 0.001) at CBT-P completion.[20]
- Participants enrolled in FBT and carried onto CBT-P were estimated to experience a mean decrease in EDI score from 56.2 at FBT commencement to 36.1 (P < 0.001) at CBT-P completion.[20]

EDE-Q scores: One single-arm nonrandomized study assessed ED symptomology through changes in EDE-Q score measurements.[15]

- The study reported that participants enrolled in HoT were estimated to experience a mean decrease in EDE-Q score of 4.04 to 1.53 (P < 0.001) from admission to the 1-year follow-up.[15]

AN symptom remission: One single-arm nonrandomized study reported the number of participants who experienced full remission and partial remission of AN symptoms for participants after the completion of FBT with CBT-P.[20]

- The study reported that 57% of participants were estimated to experience full remission of AN symptoms, while 43% experienced partial remission of AN symptoms, after the completion of FBT with CBT-P.[20]

BMI and Menstruation Outcomes

BMI Score

One study based on an RCT and 2 single-arm nonrandomized studies assessed change in BMI scores (kg/m^2) compared to the TAU cohort, or at alternative time points, for participants with AN.[13,15,23] Two of the studies reported that BMI score was higher among those enrolled in the intervention program compared to the TAU cohort, or increased from baseline to posttreatment, while 1 study reported a decrease from baseline to posttreatment:

- Participants enrolled in FT were estimated to have a mean BMI score of 18.61 versus 17.91 for the TAU cohort (P = 0.268).[13]
- Participants enrolled in HoT were estimated to experience a mean increase in BMI score from 16.26 at admission to 19.72 at 1-year follow-up, respectively.[15]
- Participants enrolled in a family-based specialized outpatient service were estimated to experience a mean decrease in BMI score from 15.1 at baseline to 14.1 at 1-year follow-up, respectively.[23]

BMI Percentile

One study based on an RCT and 1 single-arm nonrandomized study assessed the change in BMI percentile.[13,15]

- 73.3% of participants enrolled in FT were in the 10th or higher BMI percentile, versus 50% from the TAU cohort (P = 0.063).[13]
- Participants enrolled in HoT were estimated to experience a mean increase in BMI percentile from 3.61 at admission to 29.96 at 1-year follow-up, respectively.[15]

Expected Body Weight

One single-arm nonrandomized study reported the EBW percentage (%EBW) (calculated as BMI/50th BMI percentile × 100) of all participants with AN that received HoT.[15]

- The study reported that participants enrolled in HoT were estimated to experience a mean increase in %EBW from 77.99 at admission to 92.52 at 1-year follow-up, respectively.[15]

Menstruation

One study based on an RCT and 2 single-arm nonrandomized studies reported results on menstruation status for participants with AN.[13,15,23]

- 73.3% of participants enrolled in FT were estimated to experience a resumption in menstruation, versus 50% from the TAU cohort, at 3 years after treatment completion (P = 0.020).[13]
- Participants enrolled in HoT generally reported higher numbers of regular cycles, oral contraceptive use, and lower numbers of amenorrhea at the 1-year follow-up.[15]
- Participants with AN enrolled in a family-based specialized outpatient service reported a lower number of premenarcheal status, secondary amenorrhea experience, and contraceptive use at the 1-year follow-up.[23]

General Outcomes Based on BMI and Menstrual Function

One study based on an RCT and 1 single-arm nonrandomized study reported on general outcomes based on BMI and menstruation function as measured using MROC or MROAS outcomes.[13,23] Both studies reported a higher number of participants were in the good or intermediate outcome category, compared to the TAU cohort or at posttreatment:

- 60% of participants enrolled in FT were estimated to experience good or intermediate outcomes versus 31% from the TAU cohort (P = 0.026).[13]
- 45% of participants with AN enrolled in a family-based specialized outpatient service were estimated to experience good outcomes.[23]

Psychological Impact Outcomes

Psychological Distress

One study based on an RCT assessed psychological distress and reported mean global severity index scores, mean positive symptom total, and mean positive symptom distress index scores, as measured by the SCL-90 assessment tool.[13]

- Participants enrolled in FT were estimated to experience a greater mean SCL-90 score of 0.3 (P = 0.807), 0.1 (P = 0.902), and 1.3 (P = 0.362) for global severity index, positive symptom total, and positive symptom distress index, respectively, compared to the TAU cohort.[13]

Depression

One single-arm nonrandomized study reported mean depression scores as measured by the BDI-II.[15]

- The study reported that participants enrolled in HoT were estimated to experience a mean decrease in BDI-II score from 21.50 at admission to 10.29 (P = 0.003) at 1-year follow-up, respectively.[15]

Perfectionism

One single-arm nonrandomized study assessed changes in perfectionism outcomes at various phases of intervention, as measured by the EDI tool and CAPS tool.[20]

- Participants enrolled in FBT and CBT-P were estimated to experience a mean decrease in EDI perfectionism score, from 14.3 at FBT commencement to 14.0 at FBT phase II with CBT-P commencement, 11.0 (P < 0.001) at CBT-P completion, and 10.2 (P < 0.001) at FBT with CBT-P completion.[20]
- Participants enrolled in FBT and CBT-P were estimated to experience a mean decrease in EDI overcontrol score from 29.3 at FBT commencement to 28.6 at FBT phase II with CBT-P commencement, 23.7 (P < 0.05) at CBT-P completion, and 21.0 (P < 0.05) at FBT with CBT-P completion.[20]
- Participants enrolled in FBT and CBT-P were estimated to experience a mean decrease in CAPS self-oriented perfectionism score, from 47.9 at FBT commencement to 46.3 at FBT phase II with CBT-P commencement, 43.3 (P < 0.05) at CBT-P completion, and 40.1 (P < 0.001) at FBT with CBT-P completion.[20]
- Participants enrolled in FBT and CBT-P were estimated to experience a mean increase in CAPS socially prescribed perfectionism score from 28.0 at FBT commencement to 29.7 at FBT phase II with CBT commencement and to 28.5 at CBT-P completion; however, there was an estimated mean decrease from 28.0 at FBT commencement to 26.0 at FBT with CBT-P completion.[20]

Social Outcomes

School Attendance

One single-arm nonrandomized study reported the number of participants who returned to school on a full-time basis.[23]

- The study reported that 93% of participants with AN who were premenarcheal and received family-based specialized outpatient services returned to school on a full-time basis at 1-year follow-up.[23]

Social Adjustment

One study based on an RCT reported the difference in social adjustment as measured by SAS global score.[24]

- The study reported that participants enrolled in FT were estimated to experience the same mean SAS global score compared to the TAU cohort of 2.6 versus 2.6 (P = 0.91), and 2.0 versus 2.0 (P = 0.82), at baseline and at the 8-month follow-up, respectively.[24]

Health Care Utilization

Health Care Service Use

One study based on an RCT and 2 single-arm nonrandomized studies reported on various measurements of health care service use.[13,19,23]

- 43.3% and 36.7% of participants enrolled in FT were estimated to experience psychiatric rehospitalization and overall rehospitalization, respectively, compared to 60% and 50% from the TAU cohort (P = 0.196; P = 0.297).[13]
- Among participants with AN enrolled in family-based specialized outpatient services, at the 1-year follow-up, none were treated at an eating disorder unit day treatment program and 1 was treated at an outpatient treatment program, compared to 14 and 15 participants, respectively, after the first year of treatment.[23]
- Participants with AN or OSFED enrolled in FBT were estimated to have a median 207 days in FBT treatment, with 40.3% of participants who completed treatment, 40.3% who continued treatment, 21% who required intensive treatment, and 8.1% who discontinued treatment.[19]

Treatment Satisfaction

One single-arm nonrandomized study reported treatment satisfaction results for all participants with AN who received HoT.[15]

- The study reported that participants enrolled in HoT were estimated to have a mean satisfaction score of 1.77 and 1.64 at the start and end of treatment, respectively.[15]

Global Functioning Outcomes

Quality of Life

One single-arm nonrandomized study reported the mean scores for physical well-being, psychosocial well-being, parent relations and autonomy, social support and peers, and school environment outcomes, as measured by the Kidscreen-27 questionnaire.[15]

- Participants enrolled in HoT were estimated to have an increase in mean psychosocial well-being score from 30.04 to 47.82 (P < 0.001), psychosocial well-being score from 29.05 to 44.67 (P = 0.010), parent relationship and autonomy score from 52.34 to 56.56 (P = 0.023), social support and peers score from 41.95 to 51.54 (P = 0.008), and school environment score from 50.14 to 56.48 (P = 0.078), at admission to 1-year follow-up, respectively.[15]

General AN Outcomes

One study based on an RCT and 1 single-arm nonrandomized study reported general outcomes associated with SES, food intake, menstrual state, mental state, and psychosexual state as measured by the GOAS global score,[13] or the MROAS global score.[15]

- Participants enrolled in FT were estimated to have a higher mean GOAS score of 8.8 versus 8.4 in the TAU cohort (P = 0.252).[13]

- Participants enrolled in HoT were estimated to have an increase in mean MROAS score from 4.28 at admission to 8.72 at 1-year follow-up, respectively.[15]

Question 2: Clinical Harms

We identified no relevant studies that provided outcome data regarding clinical harms of early intervention programs for the treatment of adolescents and young adults living with an eating disorder.

Limitations

Clinical Review Findings

There are a number of limiting factors that should be considered for this clinical review. A major limitation of this review stems from the definition and applicability of the intervention of interest (i.e., early intervention programs). We used a definition of early intervention programs as programs delivered by community or health care–based organizations that offer interventions to treat adolescents and young adults living with eating disorders within the first 3 years of a diagnosable disorder, which may include multidisciplinary approaches to care. Evidence on intervention programs that did not meet these criteria, or were unclear in their description of intervention, was not captured in this review but may be relevant to the broader understanding of effectiveness and harms of intervention programs for adolescent and young adults with eating disorders. During the study selection and analysis, it became clear that some clinical studies focused on applying intervention programs at the early phase of illness, which was primarily seen through the use of a service model applied to regular eating disorder treatment (e.g., the FREED program), while other clinical studies focused on the clinical outcome of intervention programs that included a population within the early phase of illness. Because of this distinction, the included studies with a focus on the intentionality of early intervention programming (i.e., early intervention program studies) may provide insight into the use of the early intervention service model but cannot provide conclusions for the treatment used within the service model. Alternatively, the analysis of clinical studies for intervention programs applied at the early phase of illness is limited to assessing clinical outcome associated with the treatment program but no inferences can be made on impact of treatment program as an early intervention. It was deemed most appropriate to present the findings of these 2 categories of clinical studies separately; therefore, no combined findings from all included clinical studies are presented.

Another limitation of this clinical review is related to the low quality of evidence from the included clinical studies. Evidence related to early intervention program studies was from nonrandomized studies, which were all deemed to have a serious risk of bias for overall outcomes. Two included studies were based on the data presented in 1 RCT; however, the RCT was at high risk of bias and based on an intervention program at the early phase of illness, and therefore does not speak to early intervention programs. Multiple included studies reported outcomes from single-arm pre-post analyses to assess change in outcomes over time. In addition, the FREED-based studies assessed outcomes for participants who were able to access treatment via the FREED service model; however, the degree of heterogeneity related to type of treatment applied is unclear, and therefore outcomes may be impacted by the type of treatment received. It should also be noted that participants entering into the identified studies may not have been treatment-naive and may also have been receiving concurrent therapeutic services during the study period. Any findings from the included studies are

limited by a lack of direct comparative evidence between early intervention and non-early intervention, which prohibits the ability to draw conclusions on the clinical impacts of intervention timing. Due to the overall low quality of evidence provided from these studies, findings may lack generalizability to other populations and should be interpreted with caution. In addition, specific findings (such as weight recovery as measured by a BMI threshold of ≥ 18.5 kg/m^2) may only be applicable to adult populations and would not be generalizable to younger populations, for whom a lower threshold may be more appropriate. Despite the overall low quality of evidence and serious risk of bias identified across the included studies, we acknowledge that high-quality clinical studies at low risk of bias for investigating the impact of altering the timing of eating disorder programs may be challenging to execute. This would primarily be due to the appropriateness of tailoring interventions in these programs to each eating disorder patient, meaning these programs could and should vary based on patients' age or stage of illness. The current evidence base, which is mostly from observational studies comparing different interventions administered at different stages of illness, speaks realistically to the impact of early eating disorder programs in real-world settings, with the impact being benefits on various outcome domains.

We conducted a literature search to gather information on MIDs for the outcome measurements to determine clinical relevance of the findings of this report. MID information was found for the EDE-Q, CORE-OM, and SCL-90-R outcome measurements; however, only MID information related to the EDE-Q was deemed clinically relevant to our findings. Because of the general lack of MID information across the outcome measurements included in this review, the interpretations of the clinical significance of the findings are limited.

No studies were identified related to the clinical harms of early intervention programs. It should be noted that, despite the lack of clinical harms literature captured in this review, there may be evidence on the clinical harms that did not meet our inclusion criteria. Because of this limitation, it would be inappropriate to make inferences or draw conclusions of the potential of clinical harms associated with early intervention programs for adolescents and young adults with ED.

Equity Considerations

We used the Equity Checklist for Health Technology Assessments (ECHTA) checklist[28] and PROGRESS-Plus[29] to guide our discussion of equity considerations, primarily focusing on gaps in the included studies. We did not include a formal evaluation of the equity considerations, nor conduct a search explicitly for information related to inequity or groups that are underserved by early intervention programs in eating disorder treatment.

None of the included studies provided adequate consideration for findings of intervention programs for eating disorder treatment specifically for underrepresented populations (i.e., those identified in PROGRESS-Plus). One included study[16] included participants from low SES areas in South Australia, with the intent of providing context around early intervention programming specifically for those living in low SES areas; however, the analysis of this study is limited, based on low-quality, single-arm data with significant missing data at follow-up. Therefore, limited discussion can be generated relating to early intervention programming specifically for populations living in low SES areas. When reported, the majority of the included population

identified as female, but included studies did not distinguish sex from gender, and alternative options for identity were not reported, which may not be inclusive of trans and nonbinary persons. In addition, when reported, the majority of the included population identified as white; however, categorical metrics for data collection on race or ethnicity may be reductive and therefore misrepresentative of the entire population. Furthermore, no subgroup analysis based on any PROGRESS-Plus factors was provided in any of the included studies, which limits our ability to appropriately interpret potential findings against equity considerations.

Summary of Findings

The purpose of this clinical review was to assess the clinical effectiveness and clinical harms of early intervention programs for the treatment of adolescents and young adults with eating disorders, and in doing so, to identify the clinical components of these programs and address how the programs and their components affect patient populations and outcomes. We identified 1 RCT with 2 studies[13,24] and 12 nonrandomized studies[11,12,14-23] that fit the inclusion criteria for review. Among these studies, 8 nonrandomized studies focused on clinical effectiveness of early intervention programs for the treatment of ED,[11,12,14,16-18,21,22] while the RCT and 4 nonrandomized studies focused on clinical effectiveness of intervention program studies applied at the early phase of illness.[13,15,19,20,23,24] We did not identify any relevant studies evaluating clinical harms of early intervention programs for the treatment of adolescents and young adults with ED.

What Are the Clinical Effectiveness and Clinical Harms of Early Intervention Programs?

The findings of the review were presented by early intervention program studies first, followed by studies of intervention programs at the early phase of illness. Findings from FREED-based studies and 1 single-arm nonrandomized study suggest that participants who were included in early intervention program service models experienced reductions in eating disorder symptomology as assessed by EDE-Q scores;[11,12,16,22] eating disorder cognition-related outcomes (ED-15 questionnaire);[16] bingeing behaviour episodes;[11,12,16] purging behaviour episodes;[11,12,16] laxative use episodes;[11,12,16] excessive exercise behaviour;[12,16] and restrictive dieting behaviour.[16] Two FREED-based studies suggest that, when compared to a retrospective TAU cohort, those who were involved in the FREED study experienced mixed findings for DUSC but had lower DUED.[14,21] Four FREED-based studies and 1 single-arm nonrandomized study showed that, generally, increases in mean BMI were reported from baseline measures to follow-up,[11,16,22] or were higher for FREED cohorts compared to retrospective TAU cohorts.[12,18] Findings for participants described as "weight recovered" was mixed, but generally, at longer follow-up measures, a higher proportion of FREED participants were described as weight recovered compared to TAU participants.[11,12,18] Findings from various FREED-based studies and 1 single-arm nonrandomized study suggest that participants included in early intervention program service models experienced reductions in psychological distress;[11,12,22] psychological impact due to eating disorders;[12,16,22] depression, anxiety, and stress;[12,16,22] expressed emotion;[12,22] and function and well-being.[12] Findings from 2 FREED-based studies suggest that participants had favourable social outcome measures through work and social adjustment measures.[12,22] Overall, participants included in the FREED service model reported favourable wait times for engagement, assessment, and access to treatment when compared to a retrospective TAU cohort.[14,21,22] In addition, participants involved in the FREED service model showed favourable service use outcomes associated with treatment uptake and completion, treatment sessions

attended, and lower additional intensive treatment needed when compared to TAU cohorts.[12,14,18,21,22] The overall lack of comparative evidence from these studies provides challenges in the ability to adequately interpret any estimated differences and would be inappropriate to attribute the findings from these studies from early intervention alone. It should be noted that these findings are associated with early intervention programs aimed at providing early treatment, and therefore no conclusions can be made on the type of treatment that participants may have experienced. Overall, the findings from these studies point to promising clinical effectiveness outcomes through reductions in eating disorder symptoms, increase in BMI, and favourable psychological and social outcomes from the implementation of early intervention programs.

Findings from intervention programs at the early phase of illness provided assessments for FT compared to the TAU cohort from 1 RCT that informed 2 studies,[13,24] HoT from 1 single-arm nonrandomized study,[15] FBT from 2 single-arm nonrandomized studies,[19,23] and FBT in combination with CBT for perfectionism from 1 single-arm nonrandomized study.[20] The findings from these studies showed mixed results, but overall suggest favourable outcomes for eating disorder symptomology,[13,15,20,23] BMI and menstruation-related outcomes,[13,15,20,23] psychological impact outcomes,[13,15,20] social outcomes,[23,24] program-specific outcomes (i.e., quality of life, health care service use, and treatment satisfaction),[13,15,19] and general AN outcomes.[13,15] Although these findings show promising results for various eating disorder intervention programs, it should be noted that these interventions were not outlined as early intervention programs despite being applied at the early phase of illness. Because of this, conclusions for supporting our understanding of early intervention programs for eating disorder treatment in adolescent and young adults are limited from this evidence, as it is unclear whether any observed differences are due to the early implementation of the interventions rather than other aspects of the interventions. Nevertheless, similar to the evidence from the early intervention program studies, findings from these studies point to promising clinical effectiveness outcomes for various treatments within the eating disorder intervention programs used in the early stages of illness.

While 1 single-arm study on an intervention program at the early phase reported a clinically significant change in EDE-Q score,[15] all 4 studies from the early intervention programs found non–clinically significant changes based on the identified MID range.[11,12,16,22] For all other changes presented from the other outcome measures, no interpretation can be made on their clinical significance because MID information was unavailable or not relevant.

What Are the Clinical Components of Early Intervention Programs?

Table 2 provides an overview of the clinical components within the identified intervention programs. For the early intervention program studies, the FREED program was used or the early intervention program was based on the FREED service model.[11,12,14,16-18,21,22] The FREED service model emphasizes adherence to prespecified wait time targets with the intention of allowing earlier engagement and access to tailored treatment for people living with eating disorders.

For the intervention studies at the early phase of illness, the clinical components are derived from the treatment program being applied to people living with eating disorders. These intervention programs included the use of various FBT programs,[13,19,23,24] HoT,[15] and combination therapy using FBT and CBT.[20]

The clinical components of the treatment programs aimed to address eating disorder symptomology and promote recovery as appropriate for the individual living with eating disorders.

How Are Different Patient Populations Affected by Early Intervention Programs?

As previously mentioned, many of the included studies provided evidence related to predominantly white females with AN.[11-24] One FREED-based study reported favourable eating disorder symptomology outcomes for binge episodes, purging episodes, laxative use, and excessive exercise, specifically in participants diagnosed with BN, BED, or OSFED.[12] One single-arm nonrandomized study reported favourable eating disorder symptomology and psychological impact outcomes for participants from low SES areas.[16] Findings from these studies should be interpreted with caution due to high risk of bias and uncertainty of evidence. No studies provided subgroup analyses for alternate patient populations outlined in PROGRESS-Plus.

What Components of Early Intervention Programs Affect Patient Specific Outcomes?

None of the included studies provided direct evidence related to which early intervention program components affected patient outcomes. Based on the evidence from the early intervention program studies, timing of participant engagement and access to treatment may affect eating disorder–related outcomes; however, due to the uncertainty of the evidence, no direct conclusions can be drawn from this evidence.

Equity Considerations

For this review, we sought to identify specific groups of adolescents and young adults who may be considered equity-deserving and may experience an inequitable burden of eating disorder–associated challenges that impacted access to early intervention programs. For this process, we relied on PROGRESS-Plus[29] information from the available published literature and grey literature, and discussion with content experts. Almost all of the included studies in this review had little to no mention of equitable considerations for adolescents and young adults with eating disorders included in the studies. One single-arm nonrandomized study[16] focused on early intervention programming for participants from low SES areas in South Australia; however, due to the low-quality evidence and analysis used in the study, the findings from this study are not able to adequately inform our understanding of SES status as it relates to early intervention eating disorder treatment for this population. The included studies were conducted among relatively homogenous demographics, and no subgroups of interests were analyzed. Furthermore, 2 studies used speaking a specific language as an inclusion criterion, which potentially excluded patient populations who may benefit from access to study treatment but did not speak the language and were not able to participate in the study.[15,24] Thus, we identified limited evidence regarding the value of considerations of equity in the use of early intervention programs for treatment of adolescents and young adults with eating disorders, which highlights a potential evidence gap in this area. Future research focusing on equity-deserving groups of adolescents and young adults who are likely to experience inequitable barriers to early intervention programming is warranted.

Cost-Effectiveness and Resource Considerations

The research questions that guided this section were:

1. What is the cost-effectiveness of early intervention programs for the treatment of adolescents and young adults living with an eating disorder?
2. What are the resources required for implementing an early intervention program for the treatment of adolescents and young adults living with an eating disorder?

Cost-Effectiveness Evidence

Quantity of Research Available

A total of 650 citations were identified in the literature search. Following screening of titles and abstracts, 620 citations were excluded and 30 potentially relevant reports from the electronic search were retrieved for full-text review. From the literature search, a systematic review of studies assessing CEAs of prevention and treatment for eating disorders[30] was identified, and the bibliography of the systematic review was also searched for additionally relevant studies. From this, a total of 6 additional relevant publications were retrieved for full-text screening. This led to a total of 36 articles that were assessed for full-text review.

As none of the publications addressed the prespecified research question, all publications were excluded. The PRISMA flow chart details the selection of studies and reasons for their exclusion (refer to Figure 2: Selection of Included Cost-Effectiveness Studies). Approximately one-third of the studies were excluded because they were either study protocols, duplicates, abstracts, editorial letters, or were not CEAs (i.e., the study did not consider both cost and clinical outcomes).[31-40] Of the remaining studies, the most common reasons for exclusion were that either the modelled population or the intervention was not aligned with the research question (n = 22). With regard to the population, there were 2 common reasons for exclusion: either the mean age was outside the age range of interest (n = 4) or the study did not specifically consider a population with an eating disorder (n = 4) (e.g., the study populations included mental health indications other than eating disorders or the population only had to have self-reported body image concerns). With regard to the intervention, the most common reason for exclusion was that the intervention was either a screening or prevention program rather than a treatment program for an eating disorder (n = 9).[41-49] Among the studies that considered interventions for treating eating disorders, 1 study was excluded as it did not consider programs and instead consisted of a single intervention (n = 1), and the other studies were excluded as the intervention was not considered or intended to be delivered early (n = 4).[50-54] As a result, no published literature was available to address the cost-effectiveness of early intervention programs for the treatment of adolescents and young adults living with an eating disorder.

Health Care Resource Implications

During the scoping phase of this review, an initial assessment of the clinical evidence was undertaken to inform the feasibility of conducting a CEA. At that time, it was determined that there was unlikely to be sufficient robust clinical evidence to conduct an economic evaluation. This was confirmed once the clinical evidence review had compiled the list of included studies, as there was noted to be a high degree of heterogeneity across clinical studies evaluating the clinical effectiveness and safety of early intervention programs for the treatment of adolescents and young adults living with an eating disorder and a quantitative synthesis of clinical outcomes could not be conducted. Therefore, a de novo CEA could not be conducted without substantial uncertainty in the results. As such, CADTH sought to identify and narratively summarize

the health care resources required to implement an early intervention program for adolescents and young adults living with eating disorders to help inform decision-makers with implementation feasibility in the absence of a CEA.

To provide this information, the previously mentioned literature searches were used. The list of studies identified in the review of clinical effectiveness and safety evidence was searched for descriptions of the early intervention programs, and a search of grey literature was conducted to identify early intervention programs for eating disorders in Canada.

Several of the articles identified as part of the review of clinical effectiveness and safety evidence involved the FREED program. A study by Austin et al. (2022) included a description of some of the components to the FREED service and care model.[12] One of the key resources highlighted was the need for protected time for a health care professional trained in the treatment of eating disorders who would adopt the role of the FREED "champion" and manage the program at each site. According to the summary of the components from Austin et al., the FREED champion would also be responsible for screening patients by telephone within 48 hours of referral. The FREED model also notes targets for wait times, which may affect the resources needed to make initial assessments depending on demand. Other resources needed as part of the program will depend on the content or type of evidence-based treatments provided. CADTH noted that depending on the treatments provided, this may include funding for various health care professionals, including psychologists, dietitians, or nurses, involved in the provision of services. Austin et al. also noted the need for scheduling appointments to access services, which indicates consideration of administrative support may be necessary when implementing a program similar to the FREED model. The summary of components also described the use of an electronic patient tracker to monitor and manage patients. As such, CADTH notes that, depending on the patient tracker tool used, there may be need for consideration of either or both software licensing and information technology (IT) support to implement such a tool. Other interventions similar to the FREED service and care model have been implemented, and while the required resources generally appeared to be similar, some differences were observed, which likely depended on the type of services and intensity of treatment provided.[16]

From the clinical review, some interventions were not designed to be early intervention programs but the study population was in the early phase of a diagnosable disorder.[13,55-58] The interventions studied within this grouping of studies consisted primarily of a multidisciplinary outpatient care program. These programs typically included a team consisting of a physician, psychotherapist, dietitian or nutritionist, social worker, and psychologist, coordinated by the efforts of the primary psychiatrist responsible for treatment. The therapeutic options and the intensity of therapies were tailored to the mental and physical state of each individual. As such, the types of health care professionals providing treatment (and their time) were based on individual need. Generally, it was noted that the frequency and length of sessions ranged from a total of 9 to 32 sessions, lasting half an hour to 1 and a half hours. The interventions in which the patients had the added component of FBT in addition to CBT had more therapists on their care teams than those for patients who simply underwent CBT. Moreover, therapy sessions including family members tended to be longer than sessions with individuals only.

Additional grey literature searches did not identify early intervention programs for eating disorders; however, CADTH did identify various existing eating disorder programs. Most of these interventions were delivered by community or health care–based organizations and described a multidisciplinary approach to care. For example, the North Shore Foundry (North and West Vancouver), Looking Glass Foundation – Bridge the Gap, Eating Disorders Nova Scotia, and Body Brave provided counselling facilitated by trained health professionals such as registered clinical counsellors, dietitians, nurses, and pediatricians. Other programs facilitated virtual and in-person peer support programs, including one-on-one peer mentorship or group-based sessions with trained volunteers, such as Looking Glass Foundation – Hand in Hand and Personal Recovery Space, Eating Disorders Nova Scotia – Peer Support, and Body Brave – Virtual Support Services. For these types of programs, CADTH notes consideration should be given to resources associated with recruiting and training of volunteers as well as IT support when providing services in the virtual setting.

Overall, a number of resources were identified for consideration when implementing an early intervention program for young adults and adolescents living with an eating disorder. Some resources that were similar across all programs were those related to administration, staffing, and training. Other aspects to consider are resources related to outreach, education, and communication. There were differences found in the staffing resources required, which depended on the providers of the intervention, intensity of the intervention, and the anticipated demand for these services. For example, programs providing more intensive therapeutic options and involving different health care professionals likely have different staffing requirements from programs that are mostly based on peer or volunteer support, where the primary consideration would be the resources associated with the training of volunteers and coverage of expenses. Additional considerations included the location in which these services were provided. Programs that are based online or have an online component require consideration of relevant software and IT support, whereas services provided in person at a community or health facility are likely to have other resource considerations.

Discussion and Conclusions

Discussions of the concept of “early intervention” have existed in the literature for more than 40 years. The definition of early intervention in ED care remains inconsistent and is conceptualized differently across geographical and clinical settings. The few early intervention programs that exist to date aim to provide access to treatment much earlier during the disorder than what has historically been the case. The types of treatment provided (e.g., CBT and FBT) and the mechanisms to access care remain largely unchanged from traditional eating disorder care.

The clinical evidence suggests that early intervention programs are likely effective for the treatment of eating disorders for youth and adolescents. The authors of this review determined that benefits were observed in some outcomes for patient groups who accessed or engaged with treatment through early intervention programs. This means earlier engagement and early access to eating disorder support could have potential clinical benefits as shown through reductions in eating disorder symptoms, increase in BMI, and favourable psychological and social outcomes. Of note, while the results point toward potential

clinical benefits, clinical relevance of the magnitude of those changes is not clear based on the currently available evidence (e.g., lack of MIDs). The variable that has been evaluated in these studies is the timing of the treatment interventions, not the composition or type of interventions provided within the programs. Improved outcomes can be correlated with early intervention, but causation cannot be confirmed based on the design of the available studies. Further clinical evaluation will be needed to establish that eating disorder treatment through early intervention programs results in a clinically meaningful improvement in outcomes. No information was identified regarding any real or potential harms associated with the implementation of early intervention programs.

Early intervention is framed as improving access to care for all people living with eating disorders; however, the existing evidence remains focused on mainly white females presenting to treatment with AN. The clinical studies did include participants with ED diagnoses other than AN, such as BN, BED, and OSFED, but limited subgroup analysis and high risk of bias limit our ability to provide firm conclusions for early intervention programs based on ED diagnosis. The research suggests that current approaches to eating disorder care do not always include all groups equally. AN is often perceived as a disease that most commonly impacts white women. This focus and misconception mean some groups (e.g., 2SLGBTQ+, Indigenous peoples, racialized peoples, males, and people in rural settings) can experience more difficulty accessing diagnoses and treatment options. The authors of the included studies did not distinguish between sex and gender or provide alternative descriptions of gender expression. As such, these studies may not be inclusive of trans and nonbinary people. In addition to further research evaluating the effectiveness of early intervention programs for youth with eating disorders, a focus on methods for improving equitable access to diagnosis and treatment of eating disorders should be considered.

The advisors with lived experience that were engaged in this project indicated they had experienced issues accessing diagnostic testing and treatment services for eating disorders. They often found themselves having to advocate for access to the services they believed they needed. Access was felt to be limited by geographic proximity of existing treatment programs or affordability of private treatment where publicly funded programs were unavailable. When they were able to access treatment services, the services were at times not felt to be appropriate for their specific needs (e.g., access to a dietitian without specialized knowledge of eating disorders). The advisors expressed that parental understanding, inability to recognize the seriousness of their condition, and lack of awareness can prevent recognition of eating disorders in the early stages and contribute to delayed access to treatment. Engagement participants noted they would like to see more focus on eating disorder prevention. Fat shaming and the moralization of exercise were noted as issues to be addressed.

There were no existing economic analyses available for inclusion in this review. No comment can be made regarding the cost-effectiveness of early intervention programs until the specific resources utilized by these programs are tracked and paired with more robust clinical effectiveness data in a CEA. An overview of resources that might be necessary to consider when implementing an early intervention program was included in the report, but these resource characteristics were gathered from information on more general eating disorder treatment programs and may not be specific to early intervention programs. It is likely that the types of human and financial resources required would not change significantly when changing the

timing of the intervention to provide a service sooner. However, 1 key consideration may be to ensure that early intervention sites have a dedicated site lead who has time allocated to the program to ensure they are able to focus their time.

There are possible long-term cost savings associated with intervening earlier in the course of a disease and thereby preventing severe long-term health outcomes. These possible savings should be balanced with the potential additional costs required to implement an early intervention program. The resources required will vary depending on the treatment option and treatment frequency that is chosen. New costs to consider might include upskilling of primary care providers and other clinicians to learn more about eating disorder diagnosis and treatment, education, and training for non–health care professionals to support earlier identification of eating disorders in schools and recreational programs and developing integrated youth health care programs with early eating disorder care options.

The advisors with lived experience engaged in this project expressed a desire to normalize the ability to access treatment in de-medicalized settings like community hubs. Harm-reduction models could be considered where the focus is on improvement over time rather than complete recovery. These models may provide an interim solution for people who are not ready to participate fully in a treatment program. Peer support for both youth and parents was identified as a positive element of treatment programs. The ability to connect with others who understand and have been through similar situations was experienced as helpful. Participants felt that, for people with eating disorders, the peer support element may be more appropriate at later stages of treatment and recovery to encourage meaningful support in recovery and dissuade sharing tips and tricks for weight loss.

The advisors with lived experience did not have any direct experience with the intervention of interest, as early intervention programs for eating disorder treatment do not yet exist in Canada beyond ongoing pilot projects. No male participants were included in the consultation after a participant withdrew from the process. Further consultation with a diverse group of adolescents and young adults with lived experience with eating disorders might be beneficial to inform implementation of early intervention programs within the Canadian context.

Implications for Decision-Making

The evidence suggests that investment of health care resources into early intervention programs shows potential for overall benefit. The clinical evidence base is still being established, but the clinical results that are available point toward reductions in eating disorder symptoms, increases in BMI, and favourable psychological and social outcomes. With the intention to intervene during the early phase of illness, early intervention programs may help address challenges with access to treatment which was identified as an issue for those with lived experience. The cost-effectiveness of these programs has not yet been established.

Both human and financial resources must be considered when deciding whether to implement a new early intervention program or reallocate existing funding to an early intervention paradigm. There are currently

a limited number of health care providers in Canada who specialize in eating disorder care, particularly for youth. With access to care already a challenge for patients, the demands on these already limited resources are important considerations when choosing whether to implement any new eating disorder treatment programs. Training and recruiting of specialized health care providers will be a key implementation consideration for any new early intervention program for the treatment of eating disorders.

Inequities in access to treatment for eating disorders are well documented. The creation of early intervention treatment programs alone will not result in improved access and treatment outcomes for everyone who needs care. Paying attention to increasing equitable access to early intervention for everyone experiencing an eating disorder, and not only for those who are able to access treatment now, could help ensure equitable potential to benefit from early programming. More people will seek out treatment sooner if it is easier for them to find out where and how to access it. Increased awareness of treatment options and the benefits of early intervention for health care providers, families, and people living with eating disorders may help people seek treatment sooner and experience benefits.

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