Background

The negative impact of COVID-19 and the associated social isolation on mental health has been well-described in terms of heightened anxiety. Literature on the impact of individuals with eating disorders (EDs) and their families is only just emerging. With closures of day hospitals occurring across Canada, Spain, Austria, USA, and the UK, the most severely ill patients are left without the treatment they require. As the ED population is particularly vulnerable and at significant risk of death should they not receive care, there is an urgent need to identify and prioritize implementation of viable virtual care options.

Our team recently published Canadian Practice Guidelines for treating children and adolescents with EDs. Many of the recommended interventions are focused on in-person individual/family treatment or group therapy, which currently cannot be delivered. An addendum to our guidelines, which focuses on the provision of virtual care and online support, will help clinicians, administrators, and policymakers provide the best possible care during the COVID-19 pandemic and beyond.

Objectives

Our aim was to synthesize the best available evidence on a) the impact of COVID-19 on children and adolescents with EDs and their families; and b) virtual treatments and other online supports and technologies for this population. The research questions to drive this knowledge synthesis, listed below, were created and discussed by our research team and guideline development panel, consisting of clinicians, researchers, knowledge users and patient/parent advocates.

Research questions

In children and adolescents with EDs and their families/clinicians:

1) What is the impact of COVID-19?
2) What evidence exists for treatments that can be delivered virtually?
3) What evidence exists for self-help/parental self-help?
4) What evidence exists for other e-technology (email therapy, text messaging therapy, smartphone apps)?
5) What evidence exists for virtual day hospital, virtual group therapy, and virtual meal support?
6) What online platforms are best for supporting virtual care?
7) When should patients be seen in-person for evaluation?
8) How can monitoring be done at home?
9) How do sex and gender impact virtual care?
10) What are the gaps in the research evidence?
Methods

Overview

Since it was expected that the literature would be limited but diverse, we used scoping review methodology\textsuperscript{7-10} to ensure we collated all evidence for virtual ED treatment in the COVID-19 context, as well as research focusing on other novel technologies, online self-help support, patient/caregiver experiences with online approaches, and current gaps in the literature. All literature on the impact of COVID-19, as well as virtual and online treatments/support for children and adolescents with EDs who are up to age 25 including quantitative and qualitative papers in all languages was included. Studies involving primarily adults (those 25 years or above) were excluded. A literature search was completed using the following databases: Medline, PsycINFO, EMBASE, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), and CINAHL. The references of relevant articles obtained were also reviewed.

Results

Research question #1: What is the impact of COVID-19 in children and adolescents with EDs and their families/clinicians?

The COVID-19 pandemic has affected ED symptomatology and treatment, with challenges experienced by child and adolescent patients (\textless 25 years), their families and caregivers, and clinical teams.\textsuperscript{11} As the pandemic enables increased social media exposure, disruption to routines, social isolation, decreased social support, and modified physical activity and sleeping habits, patients may be more likely to engage in ED behaviors, wanting to establish a sense of control in such unprecedented times.\textsuperscript{4,12,13} Survey results from Australia found individuals with a self-reported history of an ED have increased restrictions around food and are engaging in binge eating, purging, or excessive exercise – attributable to the stress of the pandemic.\textsuperscript{14} In the United States and the Netherlands, adolescent ED patients reported that the COVID-19 circumstances have caused increases in anxiety, poor mental health, and concerns of relapse.\textsuperscript{15} Families with parents working in the frontlines of the pandemic may be struggling disproportionately as they attempt to balance the newfound burden of ED home monitoring (e.g. weighing their child, meal supervision) with working additional or irregular hours.\textsuperscript{11} Even health care providers are experiencing increased stress, as they were abruptly required to develop new ED treatment plans – using unfamiliar virtual care platforms rather than evidence-based in-person methods – to comply with social distancing regulations.\textsuperscript{16}

With a lack of direction in terms of understanding the best option for virtual care, all ED parties are suffering the repercussions of a health care system that was ill-equipped for a disaster, such as the COVID-19 pandemic. Despite this, telemedicine appears to be a promising treatment
alternative for adolescent ED care during the pandemic. Telemedicine (also referred to as telehealth) can be defined as real-time, audio-video communication tools that permit the delivery of care by clinicians for patients in different locations. ED treatment via telemedicine includes videoconferencing and telephone services (e.g. for family-based therapy and cognitive behavioral therapy), email therapy, text messaging therapy, smartphone applications (‘apps’), virtual reality, and guided and unguided self-help online programs.

Research question #2: What evidence exists for ED treatments that can be delivered virtually?

Virtual FBT
According to our Canadian Practice Guidelines for treating children and adolescents with EDs, Family-Based Therapy (FBT) is a widely supported and highly effective treatment for child and adolescent anorexia nervosa and bulimia nervosa. However, the efficacy of virtually delivered FBT versus the traditional in-person method is not supported by the same abundance of research. Among children and adolescents with anorexia nervosa, case series results for telehealth FBT demonstrated positive effects in patient weight gain, depression, and self-esteem, similar to in-person delivery, as well as high rates of parent satisfaction with care, but there are no published randomized controlled trials for the child and adolescent population. Given the uncertainty surrounding in-person care during the pandemic, telehealth FBT should continue to be explored to better understand the appropriateness of virtual FBT for children and adolescents, and to ensure that equivalent outcomes can be translated through various delivery modalities.

Virtual CBT
Virtual Cognitive Behavioral Therapy (CBT) may also be seen as a viable treatment alternative for children and adolescents with bulimia nervosa, binge eating disorder, or eating disorder not otherwise specified, producing outcomes of reduced ED behaviors (e.g. dietary restraint, binging episodes, and weight, shape, and eating concerns) and improved quality of life similar to face-to-face delivery. A web-based CBT intervention, consisting of online CBT modules and virtual sessions with a therapist, peer support via virtual messaging boards, and email support from a clinician, has also been found to improve ED symptoms in adolescents, with researchers supporting its potential to be used as a first step for treatment of bulimia nervosa.

Research question #3: What evidence exists for virtual self-help and parental self-help?

For children and adolescents with EDs, manualized and virtual self-help interventions appear to be beneficial. Moderated online discussion forums, online- or telephone-guided self-help programs rooted in CBT, and internet-based self-monitoring interventions with low or high intensity virtual support have significantly reduced ED symptomatology and psychopathology in bulimia nervosa and anorexia nervosa adolescent patients, in addition to fostering supportive environments for treatment and recovery.
Moderators for these self-help interventions are often health care professionals such as dieticians, therapists, psychiatrists, but can also consist of trained master’s students studying clinical psychology. Conclusions about recommending guided versus unguided virtual self-help among the child and adolescent ED population requires further research.

For parental self-help, internet-based chat support groups for parents in FBT for adolescent EDs are well-received, with the vast majority of participants reporting that the chat provided a helpful source of support in coping with their child’s ED and in the use of FBT. Other forms of parental guided self-help programs of FBT, intended to train parents on the principles of FBT for their child with anorexia nervosa, have also demonstrated feasibility and acceptability among families willing to undertake online treatment.

**Research question #4: What evidence exists for other e-technology (email therapy, text messaging therapy, smartphone apps)?**

Previous research has also been conducted testing various e-technologies in child and adolescent ED treatment, yet the evidence is limited. Email therapy, as an adjunct to outpatient treatment for anorexia nervosa has been well-accepted and deemed helpful by adolescent patients and their treating clinicians, where both parties benefitted from the additional opportunities for communication. However, some e-technology results for adolescent EDs have not produced conclusions to garner confident implementation in everyday practice. For example, a study that tested motivational text message treatment for older adolescents with anorexia nervosa and bulimia nervosa found the intervention to be a feasible and an acceptable treatment adjunct, effective at increasing individual motivation to change, but having minimal impact on actual ED behavior changes. Pilot trials testing video- or smartphone-based aftercare interventions have also demonstrated high degrees of acceptability and feasibility among adolescent anorexia nervosa patients, supporting symptom stabilization following inpatient or outpatient treatment, however larger scale randomized controlled trials are needed to investigate the efficacy of these technologies.

**Research question #5: What evidence exists for virtual day hospital, virtual group therapy, and virtual meal support?**

A case study of a 16-year old female with restrictive anorexia nervosa revealed that video-assisted CBT – consisting of filming the patient during mealtime to capture her eating habits and re-watching the video footage with her therapist – may be a more effective therapeutic tool than the use of verbal psychotherapy alone. Overtime, the patient recognized her abnormal eating behaviors, developed more normal eating patterns, and gained weight. While this particular example of virtual meal support did involve the patient and therapist meeting in-person to watch her mealtime videos, this could be modified to meet the current social distancing requirements.
for the COVID-19 pandemic, consisting of only a virtual viewing and discussion. However, this requires further research to ensure similar outcomes could be achieved.

Research question #6: What online platforms are best for supporting virtual care?

According to an online forum of ED clinicians sharing experiences about working with EDs using telehealth methods, reliable technologies consist of cloud-based videoconferencing and live-chat services, including Zoom, Facetalk, Google Meets, Vsee, and Microsoft Teams. Other software choices, such as Skype and Facetime are seen as less reliable and secure, and therefore are not currently recommended. Zoom specifically may be the most favorable platform supporting virtual ED care, given its ability to allow for confidential sharing of documents during sessions.

Research question #7: When should patients be seen in-person for evaluation?

This research question is currently under review.

Research question #8: How can monitoring be done at home?

Exploring options for effective remote monitoring of child and adolescent ED treatment is of utmost importance, especially during the COVID-19 pandemic given the dramatic reliance on virtual care. Digital diagnostic and assessment tools, such as wearable sensors and wireless technologies, are currently being explored in child and adolescent EDs, for use in home settings in addition to hospitals. Pilot study results found a wearable chest strap sensor to be a feasible digital device for young adolescent anorexia nervosa patients, providing convenient and accurate information on heart rate and heart rate variability, that can be used to monitor patient progress remotely. Despite these advances, clinicians need to anticipate challenges and be aware of potential solutions in remote monitoring, so they can better prepare to treat patients when inevitable issues arise.

Research question #9: How do sex and gender impact virtual care?

This research question is currently under review.

Research question #10: What are the gaps in the research evidence?

This research question is currently under review.
Table 1. Challenges and proposed solutions associated with virtual care for child and adolescent ED patients

<table>
<thead>
<tr>
<th>Challenges of virtual care(^{17,21,41})</th>
<th>Proposed solutions to improve virtual care (^{16,17,21})</th>
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<tbody>
<tr>
<td>• Patients may lack access to an appropriate device to engage in telemedicine visits</td>
<td>• Patients can borrow a laptop or tablet from family members/friends, or from school or community programs, if possible</td>
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<td>• Technology literacy gap within a family</td>
<td>• Technical support could be arranged by the clinical team (e.g. online tutorials or phone support) to ensure patients and families have the opportunity to learn how to properly use the technology for their sessions</td>
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<td>• Inability to assess recommended anthropomorphic data for ED visits (e.g. inaccurate patient weighing at home)</td>
<td>• Training family members to collect weights at home, joining the patient virtually for weighing, recommending parents limit scale access except for required weighing, or asking the patient to take a video or picture of the scale during weighing</td>
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<td>• Privacy concerns</td>
<td>• Confirming patient privacy (when required), encouraging the use of headphones, having parents and the patient call in from separate devices so that one can be ‘removed’ from the visit to facilitate confidential discussions</td>
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<td>• Difficulties building rapport and displaying positive regard at a distance</td>
<td>• Looking at the camera rather than at the screen to promote eye contact and exaggerating visual cues to help the patient feel more at ease</td>
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<tr>
<td>• Issues ensuring family involvement</td>
<td>• Suggesting family members arrange themselves in a semi-circle rather than a straight line to promote greater engagement among family members</td>
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<td>• Language barriers</td>
<td>• Integrating standard phone interpretation services directly into the telemedicine platform</td>
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<td>• Inability to oversee mealtime</td>
<td>• Asking for explicit descriptions/pictures of food eaten or being present virtually during a meal</td>
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<td>• Patient and/or parent disconnecting or leaving the video session unexpectedly</td>
<td>• Giving patients the option to join sessions by voice until ready to connect video, and having family contact information readily available to attempt to re-connect if the connection is lost</td>
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References


