

Additional support needs of adolescents with obesity during an obesity treatment trial:

Fast Track to Health

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Author agreement

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Abstract

Background: Treatment-seeking adolescents with obesity may have diverse dietetic, psychological or medical needs that require support during obesity treatment.

Objectives: To characterise initial referral reasons, content, and outcome of support visits provided in addition to protocolised visits during an obesity treatment trial.

Methods: The Fast Track to Health trial was a 52-week multi-site randomised trial conducted between 2018 and 2023 in Australia, comparing intermittent and continuous energy restricted dietary interventions delivered as part of an intensive behavioural intervention in adolescents with obesity and ≥ 1 obesity-related complications. Alongside protocolised mental health screening and medical and dietetic reviews, additional support was provided by the study dietitian, paediatrician or psychologist if needed or requested by families. Two reviewers independently coded deidentified clinical notes for each additional support visit to identify referral reasons, content and outcome of each visit.

Results: Of 141 adolescents enrolled, 51 (36.2%) attended at least one additional support session, with most (n=31) having one visit. Most referrals were initiated by a clinician (n=34) and included requests for dietetic review (n=16), motivation and/or support during COVID-19 lockdowns (n=15), general psychological review (n=14) and anxiety (n=11).

Conclusion: Understanding the diverse needs of adolescents with obesity is essential to inform obesity treatment interventions.

Impact statement

Treatment-seeking adolescents with obesity have diverse needs that require clinical support.

Within the Fast Track to Health trial, a third of adolescents received support in addition to protocolised visits. A subgroup of adolescents required more frequent dietetic support and some needed general or specific psychological support.

Introduction

Adolescents with obesity are vulnerable to physical and psychosocial health conditions¹, including metabolic disorders², poorer quality of life^{3,4}, and increased depression⁵, anxiety⁶ and disordered eating^{7,8}. During the COVID-19 pandemic, weight concerns and mental health difficulties increased for adolescents with and without obesity⁹⁻¹³. Psychosocial issues may have a reciprocal relationship with weight gain and physical complications^{6,14}. Given that adolescents with obesity are likely to remain affected by obesity and associated complications into adulthood^{15,16}, it is important that clinicians understand the specific clinical needs of individual adolescents presenting for obesity treatment such as dietary interventions.

Multicomponent behavioural interventions are foundational for the treatment of adolescent obesity¹⁷⁻¹⁹. These interventions typically use behaviour change strategies, such as goal-setting and self-monitoring, to support changes in dietary intake, and physical and sedentary activity. For dietary interventions, this may involve dietary education and/or energy restriction^{18,19}. Clinical practice guidelines recommend the use of intensive dietary approaches for severe obesity and associated complications^{17,20}. More prescriptive dietary interventions with higher levels of energy restriction require regular monitoring by clinicians^{20,21}. Support provided may involve reviewing individualised dietary plans, eating behaviours and weight changes, and addressing any challenges and barriers to behaviour change and treatment adherence^{18,22}.

Qualitative reviews of adolescent experiences in behavioural interventions have identified that adolescents value professional support, particularly when longer term support outside of weight loss (e.g., general wellbeing, self-esteem) is also provided²³⁻²⁵. Understanding common needs of adolescents in dietary interventions, and how these may be individualised

is important. Adolescents with obesity-related complications may also have clinical needs outside of weight loss, such as their psychosocial health²⁶. Given limited healthcare use by adolescents²⁷ and barriers to accessing obesity treatment^{28,29}, psychosocial needs may not be identified until presenting to obesity treatment and further support and referrals may be required. Understanding support needs may strengthen our understanding of how psychosocial health impacts obesity outcomes for adolescents^{30,31}. However, past intervention studies have not reported the types of additional support required or how these needs might be identified in obesity treatment. Therefore, this study aimed to: a) examine how adolescents were identified as requiring additional support, b) identify the types of additional support received by adolescents, and c) evaluate the outcome of these support visits for adolescents participating in the Fast Track to Health trial³².

Methods

Participants

Adolescents were participants in Fast Track to Health, a multi-site, parallel, randomised controlled trial conducted at two tertiary children's hospitals between 2018 and 2023 in Sydney and Melbourne, Australia. The study was approved by The Sydney Children's Hospitals Network Human Research Ethics Committee (HREC/17/SCHN/164) and was prospectively registered with the Australian New Zealand Clinical Trial Registry (ACTRN12617001630303). The study protocol and primary outcomes have been reported previously³²⁻³⁴.

Eligible participants were 13 to 17 years of age with obesity³⁵ and at least one associated complication, including pre-diabetes, insulin resistance, acanthosis nigricans, hypertension, low high-density lipoprotein cholesterol, high triglycerides, elevated alanine transaminase or

gamma-glutamyl transferase, and polycystic ovary syndrome³². Exclusion criteria were secondary obesity, significant intellectual disability, medical or psychiatric illness, type 2 diabetes, currently undergoing treatment for a clinical eating disorder, pregnant or planning pregnancy, taking medications that affect weight in the short-term (excluding metformin), adolescent or parent unable to communicate in English, current enrolment in a weight management program, or having a body mass index (BMI) greater than 45^{32,33}. Written informed consent was provided by parents/caregivers and adolescents provided agreement to participate.

Intervention and study design

Fast Track to Health was a 52-week intensive behavioural intervention in which participants were randomised to receive intermittent (IER) or continuous energy restriction (CER) following a very low energy diet (VLED). The intervention consisted of three phases: Phase 1: weeks 0 to 4, VLED for all participants; Phase 2: weeks 5 to 16, intensive intervention, in which participants transitioned to IER or CER; and Phase 3: weeks 17 to 52, continued intervention and/or maintenance with reduced support.

The Fast Track to Health intervention was delivered by trained dietitians and participants were reviewed by a study paediatrician at baseline, when assessed for eligibility, and at week-16. Adolescents had a total of 22 scheduled contacts with the dietitian over 52 weeks, of which 13 were face-to-face or via telehealth and nine were via text messages, phone calls or email. Each participant could opt to receive weekly standardised motivational text messages. During Phase 1, participants had weekly consultations with the study dietitian, with additional support provided at week-1 via phone. During Phase 2, participants met with the dietitian at weeks 6, 9, 12 and 16, with support provided via text messages, phone or email at

weeks 8, 11 and 14. Participants had fewer scheduled dietetic consultations during Phase 3, and met with the study dietitian at weeks 20, 26, 36 and 52, with support provided via text messages, phone or email at weeks 18, 24, 28, 42 and 48³² (**Figure 1**). During COVID-19 lockdowns, face-to-face visits continued for key visits (baseline, week-4, week-16, week-52) as directed by hospital regulations. Scheduled dietetic sessions were delivered via telehealth during lockdown unless a face-to-face appointment was clinically indicated.

Dietetic consultations were guided by a standard operating procedure outlining relevant behaviour change components that were applied for each participant, e.g., goal setting, problem-solving, social support strategies³². All participants were screened for depression and eating disorders via a structured protocol using the Center for Epidemiologic Studies Depression Scale – Revised 10-item Version for Adolescents (CESDR-10)^{36,37} and Eating Disorder Examination Questionnaire (EDE-Q)³⁸ self-report questionnaires at baseline, week-4, week-16, and week-52 and were monitored for disordered eating by study dietitians during all scheduled consultations, as previously described^{32,34}. As part of the trial, a study psychologist and/or paediatrician assessed participants identified as requiring further review following screening, with input from the study dietitian³². All participants met with the study dietitian at week-52 (end of intervention) and were referred to their primary care provider for ongoing care.

Additional support visits

Additional support visits were defined as visits outside of scheduled, protocolised consultations in which clinical support (psychological, dietetic, and/or medical) was provided. These visits occurred within all phases of the trial, or post week-52 if further support was required before engagement in follow-up services. Support was provided face-to-

face or via telehealth by a study dietitian, paediatrician, or clinical psychologist. Participants were identified for additional support via a) clinician-initiated referrals or b) family request. Among clinician-initiated referrals, adolescents were identified for additional support in three ways: i) following routine depression and eating disorder screening, with those who required additional support for depression and disordered eating identified, ii) monitoring for disordered eating in routine dietetic visits, iii) by clinicians if further review and/or discussion of referral options beyond primary care were needed. Participants were also offered additional psychological support during COVID-19 lockdowns by email or within scheduled dietetic visits. Any support provided as part of the Fast Track to Health protocol was excluded e.g., psychological assessments as part of screening that did not require further follow-up, dietetic and medical support provided as part of protocolised visits.

Data collection

Details of additional support visits were recorded as a clinical case note by the study clinician who delivered the session. Details included the referral reason, date of the visit, start and end time of the visit, clinical content discussed and follow-up information.

Data analysis

De-identified clinical case notes of each additional support visit were collated in Microsoft Excel. Two authors (CK, HJ) independently reviewed and coded case notes to identify referral reasons, content and outcome of additional visits. Broad categories (e.g., psychological, dietetic, medical) were first used to group and code the case notes and further details of each visit (e.g., the content discussed) were then coded inductively. Consensus was achieved through discussion and all codes were updated. Clarity was sought from the treating clinician where possible and if further context was needed. Descriptive statistics were

conducted using Microsoft Excel and IBM SPSS Statistics, version 29.0 (Chicago, IL) to sum the types of referrals, content and outcome of additional visits, and to calculate the median duration of visits. Independent-sample *t* tests, Fisher's exact test and Mann-Whitney *U* tests were also used to test for differences between baseline variables between those who received and did not receive additional support. Participants were also categorised into three groups based on enrolment and completion date to note the proportion of participants who received additional support during the COVID-19 pandemic: i) not impacted by COVID-19; enrolled and completed the study before 1 January 2020, ii) partially impacted by COVID-19; enrolled before 1 January 2020 and completed the study after January 2020, and iii) impacted by COVID-19; enrolled and completed the study after 1 January 2020.

Results

A total of 141 adolescents (median [IQR] age, 14.8 [IQR 13.8-15.7] years; 70 females [49.6%], 71 males [50.4%]) were enrolled in the study. Of this, 51 participants (median [IQR] age, 14.7 [IQR 13.8-15.8] years; 29 females [56.9%], 22 males [43.1%]; 32 in CER group [62.7%], 19 in IER group [37.3%]) attended at least one additional visit with the study dietitian, paediatrician, and/or clinical psychologist. **Table 1** presents baseline characteristics for participants who received and did not receive additional support. There were no differences in baseline demographics, anthropometry, or eating disorder symptoms across groups, $p > .05$. There was a statistically significant association between receiving additional support and study allocation, Fisher's exact test, $p = .023$. Adolescents who received additional support had higher baseline depression symptoms than those who did not receive additional support, $z = -2.75$, $p = .006$. Fifty participants enrolled and completed the study before the COVID-19 pandemic (7 [14%] had additional support session/s), 21 enrolled before and completed the study during the COVID-19 pandemic (13 [62%] had additional

support session/s), and 70 participants enrolled after 1 January 2020 (31 [44%] had additional support session/s)³³.

A total of 102 additional support sessions were delivered across the 51 participants, with most sessions (n=73) delivered in Phase 3 of the trial, when scheduled consultations reduced. Most additional support sessions (n=83) were delivered after January 2020. Of the 51 participants who received additional support, 43 (84.3%; 31 in CER group and 12 in IER group) completed the intervention. The number of additional support visits ranged from 1 to 13 per participant, with 31 participants having one visit, 18 having 2-5 visits, one participant having 6-10 visits and one participant having more than 10 visits.

Initial referrals

For the 51 adolescents who received additional support sessions, 34 were referred by the study dietitian and/or paediatrician for clinical issues (e.g., anxiety, meal plan changes) (n=12), following depression and eating disorder screening questionnaires (n=12), monitoring for disordered eating in dietetic sessions (n=4), a combination of screening questionnaires and clinical issues (n=3), or for other reasons (e.g., limited face-to-face visits, long gaps between protocolised visits due to rescheduling) (n=3). Fifteen adolescents were initially identified as requiring additional support due to the family requesting the review (e.g. during COVID-19 lockdowns), and two had unclear initial referral reasons. Most participants referred in Phases 1 and 2 received psychological support in their initial additional support visit (n=15), and over half of the participants referred in Phase 3 received only dietary input in their initial additional support visit (n=19), of which 16 received a single additional support session (**Figure 1**).

Content of additional support visits

Most participants received only psychological (n=23) or dietary (n=19) additional support within the trial. Four adolescents received a combination of medical, psychological and dietary support, four received psychological and dietary support and one received medical support only (**Figure 2**). The most common support reasons included general dietetic review (e.g. to review meal plans) (n=16), motivation and/or support during COVID-19 lockdowns (n=15), general psychological review (e.g., to provide follow-up support following eating disorder or depression screening) (n=14), anxiety (n=11), body dissatisfaction and weight or shape concerns (n=6), restriction or rigidity around eating and/or exercise (n=6), and general medical review or low mood (both n=5). Further detail of psychological, dietary and medical issues discussed are provided as supplementary online material (**Table S1**).

Outcome of additional support visits

Most adolescents (n=38) completed their additional support during the trial and returned to protocolised treatment. One adolescent completed their additional support during the trial and had discussions about external mental health services for pre-existing anxiety before returning to protocolised treatment. Twelve adolescents completed their final additional support visit at or after their protocolised week-52 visit, in which ongoing primary care and/or referral pathways (e.g. to community mental health services, self-help anxiety programs) were discussed.

Study clinician involved

Of the 102 additional support visits provided, the majority were delivered by the clinical psychologist (54 consultations) or dietitian (32 consultations). The study paediatrician

delivered 10 consultations, and 6 were combined consultations with the multidisciplinary team (study paediatrician, psychologist and dietitian).

Duration of additional support visits

The start and finish time of each appointment was available for 49 of the 102 additional support visits (40 delivered by the psychologist, 7 delivered by the dietitian, and 2 delivered as a combined consultation by the multidisciplinary team). Appointments ranged from 10 to 134 minutes, with a median of 43 minutes per visit (IQR 32-56). Combined consultations were longer in duration (median=126 minutes, IQR 121-130) than psychology (median=46 minutes, IQR 34-56) and dietary (median=20 minutes, IQR 13-38) consultations.

Discussion

This study aimed to identify initial referral reasons, the content and outcome of support visits required in addition to the protocolised intervention for adolescents with obesity participating in the Fast Track to Health trial. Over a third of adolescents in the trial received additional support initiated by clinicians or families. Most participants received general dietetic or psychological support, nevertheless a proportion had specific needs. Most adolescents completed their additional support during the trial and returned to protocolised treatment.

Adolescents in the Fast Track to Health trial received a total of 22 protocolised contacts with the study dietitian and paediatrician via face-to-face/telehealth visits or phone/online support, and had overall reductions in BMI and improvements in cardiometabolic health at week-52^{32,33}. One third of adolescents required additional support, with more from the CER group compared to the IER group, which may be due to more withdrawals from the IER group in comparison to CER group³³ and a larger proportion of adolescents being referred for

additional dietary support during Phase 3. This highlights the need for regular dietary support to modify meal plans, address challenges and support motivation. In Fast Track to Health, interviews with families indicated that longer-term dietary support would have been beneficial for adherence as the trial progressed³⁹, and most required one additional dietary session in Phase 3 only. More frequent clinical contact and longer-term support may be beneficial in any dietetic intervention, though the dosage, intensity and format required may also differ for each individual⁴⁰⁻⁴². In routine clinical practice, the frequency, duration, and intensity of behavioural support is likely to vary considerably, often with limited access to obesity treatment services, fewer contact hours and resourcing^{29,43,44}. In Australia, few adolescents with obesity receive treatment in primary care settings, and health professionals who provide obesity treatment for adolescents report less intensity (e.g., 3-6 consultations varying between 30-60 minutes) than that provided in the Fast Track to Health trial^{44,45}. Additional therapeutic contact is often seen as desirable by young people with obesity and their families but is not always feasible in clinical care^{23,29,46}. Future studies should systematically document additional support provided and associated resourcing needs to inform prioritisation of care and improved identification of adolescents who do and do not require further support. Telehealth support may also overcome barriers in delivering additional support, though the impact of remote care on engagement and adherence are important considerations⁴⁷.

Adolescents with obesity and associated complications may present with pre-existing psychological comorbidities²⁶. In the Fast Track to Health trial, overall depressive symptoms and weight-related outcomes were improved at week-52^{33,34}, yet 31 adolescents required additional support for a range of mental health reasons. While most of these adolescents received general psychological reviews (e.g., to provide follow-up support following

screening), some also had specific needs relating to COVID-19 lockdowns, anxiety, weight or shape concerns, restriction and rigidity and low mood. Adolescents who received additional support also reported higher baseline depression scores than those who did not, indicating that screening for low mood may help identify those who require further support in obesity treatment. While past literature has suggested that mental health conditions impact obesity outcomes and adherence by affecting one's ability to initiate and maintain behavioural change^{6,22,30}, associations between change in depression or anxiety and weight-related outcomes has not been consistently found⁴⁸. The relationship between psychosocial health and obesity outcomes is likely complex, and further research on psychosocial predictors of adolescent obesity treatment and adherence outcomes is needed to better understand this relationship.

An estimated one in seven adolescents experiences a mental health disorder⁴⁹, with the risk of depression⁵, anxiety⁶, overvaluation of weight and shape⁵⁰ and disordered eating^{51,52} greater for adolescents with obesity than their lower-weight peers. Mental health concerns also increased for all adolescents during the COVID-19 pandemic^{10-12,53}. Professional mental health care needs among adolescents are commonly unmet, potentially due to barriers such as stigma, preference for self-management and past negative help-seeking experiences^{54,55}. This is particularly paramount for adolescents with obesity, who report feeling solely responsible for their own health care and experience weight bias and stigma that may negatively affect their use of, and experiences in, health care⁵⁶⁻⁵⁸. Our findings in the Fast Track to Health trial suggest that when access to psychological support is provided, it will be used. Recognising and addressing weight stigma and identifying risks via general mental health reviews in obesity treatment settings may ensure those who require additional psychological support receive it^{34,59}. Appropriate mental health promotion, resourcing, aligned clinical services and

access to referral pathways are also important considerations in ensuring adolescents with obesity receive holistic care^{29,60,61}.

Strengths and limitations

This is the first study to report on additional support needs for treatment-seeking adolescents with obesity, participating in a clinical trial. Rigorous screening and monitoring procedures^{32,34}, clinician-training on dietetic and mental health needs, and greater resourcing within this trial are likely to have helped identify and manage additional support needs within the intervention. As with standard clinical practice, clinical judgment from trained clinicians helped identify participants who required additional support. However, there are some limitations. Data were extracted from clinical case notes and should be interpreted with caution. As this analysis reports on additional support sessions only, it does not capture content discussed in protocolised visits. This trial was also undertaken during the COVID-19 pandemic and capacity to offer psychological support increased at one site from mid 2021, making it difficult to differentiate whether participants required further support due to COVID-19 lockdowns, preexisting dietetic, medical or psychological needs, or availability of psychological support. Given COVID-19 restrictions and lockdowns varied across states and local government areas in Australia⁶², it was difficult to define if a support session occurred within lockdown for each adolescent.

Conclusion

The findings from this study suggest that a subgroup of adolescents with obesity have additional dietetic and psychological needs beyond what was provided in a protocolised intervention. Regular dietetic support is helpful throughout interventions and general psychological reviews may improve identification of adolescents who require additional

mental health support. Understanding individualised needs of adolescents with obesity and associated complications will inform important considerations in the design of interventions and improve tailored care in obesity treatment.

Table 1. Study allocation and baseline characteristics for participants who received and did not receive additional support

	Participants who received additional support (n=51)	Participants who did not receive additional support (n=90)
Study allocation*, No (%)		
IER	19 (37.3)	52 (57.8)
CER	32 (62.7)	38 (42.2)
Age in years, median (IQR)	14.67 (13.75 – 15.75)	14.75 (13.73 – 15.60)
Sex, No (%)		
Male	22 (43.1)	49 (54.4)
Female	29 (56.9)	41 (45.6)
Anthropometry, mean (SD)		
BMI, kg/m ²	35.22 (4.08)	35.48 (4.26)
BMI z score	2.36 (0.43)	2.42 (0.48)
BMI95	128.50 (14.54)	130.40 (15.50)
Place of birth ^a , No (%)		
Born in Australia	43 (84.3)	74 (82.2)
Born outside of Australia	7 (13.7)	10 (11.1)
Language spoken at home ^b , No (%)		
English	47 (92.2)	84 (93.3)
Language other than English	23 (45.1)	34 (37.8)
Aboriginal or Torres Strait Islander ^c , No (%)	0 (0.0)	2 (0.0)
Psychological screening, median (IQR)		
EDE-Q total	2.66 (1.56 – 3.56)	2.09 (1.38 – 2.92)
CESDR-10*	12.00 (6.00 – 19.00)	7.25 (3.75 – 13.00)

Note. IER, intermittent energy restriction. CER, continuous energy restriction. BMI, body mass index (calculated as weight in kilograms divided by height in metres squared). BMI95, BMI expressed as a percentage of the 95th percentile. EDE-Q, Eating Disorder Examination Questionnaire (total score). CESDR-10, Center for Epidemiological Studies Depression Scale-Revised 10-item Version for Adolescents.

* $p < .05$. ^a n=7 missing data, ^b Participants could select more than one language, n=3 missing data, ^c n=24 missing data

Figure legends

Figure 1. Protocolised visits and characteristics of initial additional support for participants (n=51).

Note. IER= intermittent energy restriction. CER= continuous energy restriction. Dietitian and paediatrician contact was face-to-face or via telehealth. Dietitian other support was provided via phone, email and/or text messages. Clinician refers to study dietitian and/or paediatrician. A study psychologist reviewed participants if clinically indicated.

*1 initial additional support session was completed in week-70 following referral at week-52.

Figure 2. Support needs addressed in additional support visits for participants (n=51).

Note. Additional support often covered several topic areas. Twenty-three participants discussed more than one topic within the same visit (n=6) or across different additional support visits (n=17). Of these 23 participants, 8 received psychological, dietary, and/or medical support and 15 received psychological support only.

* Other medical topics included hair loss, gynecomastia, cholecystectomy, fainting, low iron (n=1 each).

† Other psychological topics included self-esteem (n=2), symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) (n=1) or Autism Spectrum Disorder (n=2), sleep (n=1), bullying (n=1), emotion regulation (n=1) and school refusal (n=1).

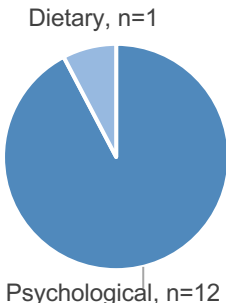
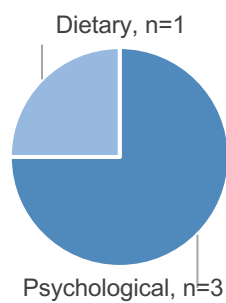
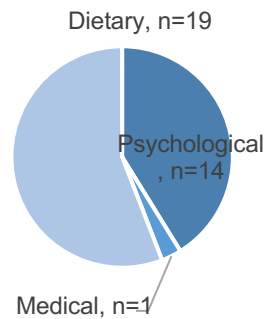
		Phase 1 VLED					Phase 2 Intensive Intervention							Phase 3 Continued intervention/maintenance									
Per-protocol	Weeks	0	1	2	3	4	6	8	9	11	12	14	16	18	20	24	26	28	36	42	48	52	
	Dietitian contact	x	x	x	x	x	x		x		x		x		x		x		x			x	
	Dietitian other		x					x		x		x		x		x		x		x	x		
	Pediatrician contact	x											x										
	Psychological screening	x				x							x									x	
Number of referrals		n=13 referrals					n=4 referrals							n=34 referrals*									
Additional support	Group	IER (n=6) CER (n=7)					IER (n=0) CER (n=4)							IER (n=12) CER (n=22)									
	Initial referral reasons	Screening (n=10) Requested by clinician for clinical issues (n=2) Requested by family (n=1)					Screening and requested by clinician (n=1) Monitoring for disordered eating (n=1) Requested by family (n=1) Requested by clinician for clinical issues (n=1)							Requested by family (n=13) Requested by clinician for clinical issues (n=9) Requested by clinician for other reasons (n=3) Monitoring for disordered eating (n=3) Screening (n=2) Unclear (n=2) Screening and requested by clinician (n=2)									
	Type of initial support																						

Figure 1.

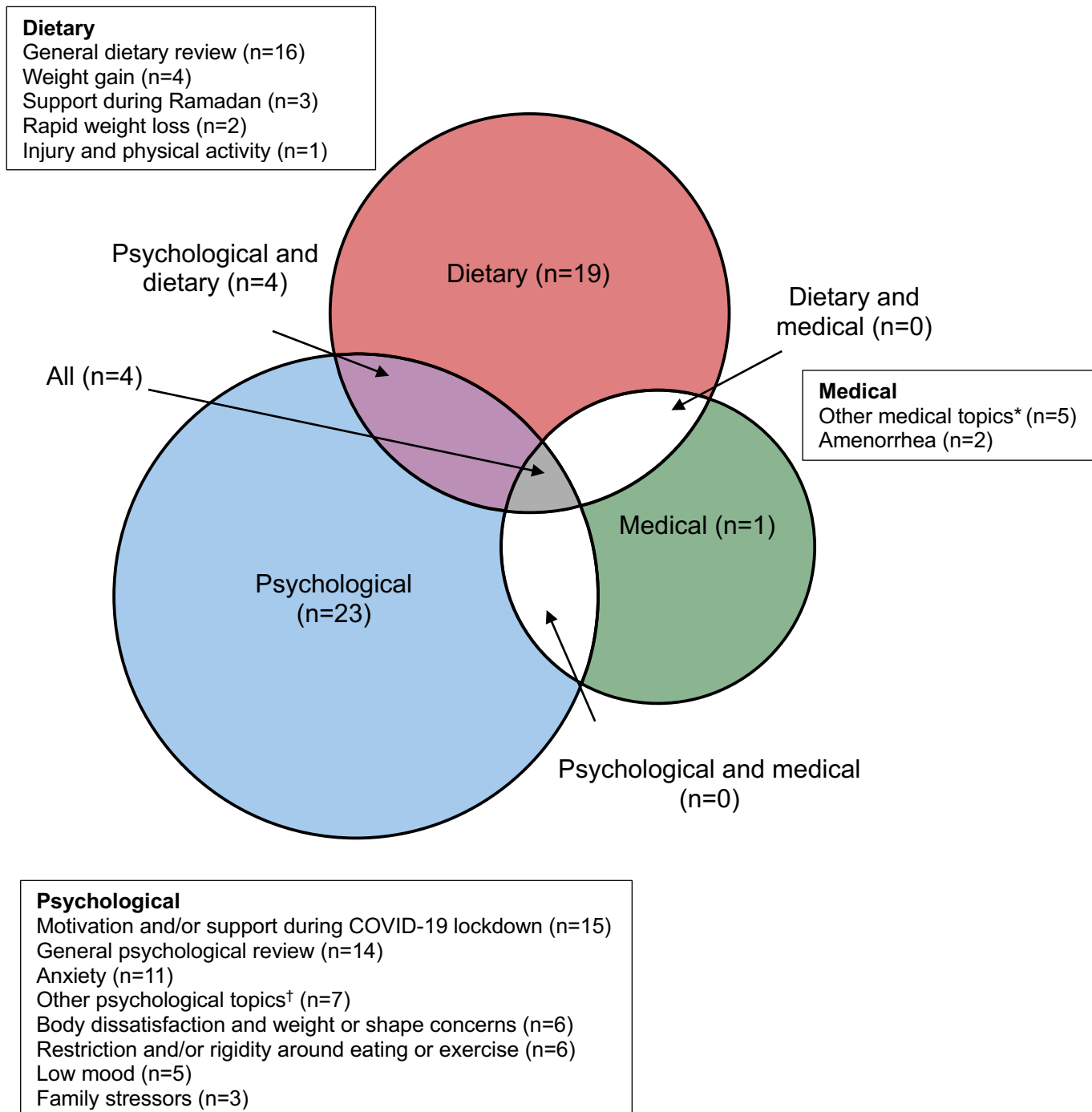


Figure 2.

Supplementary File

Table S1. Details of topics discussed in additional support visits for participants (n=51)

Psychological (n=23)	Dietary (n=19)	Medical (n=1)	Psychological and Dietary (n=4)	All (n=4)
General psychological (n=11)	General dietary (n=9)	Gynecomastia (n=1)	General dietary (n=3)	General dietary (n=4)
Motivation and/or support for COVID-19 lockdowns (n=10)	Motivation and/or support for COVID-19 lockdowns (n=4)		Anxiety (n=3)	Restriction and/or rigidity around eating or exercise (n=3)
Anxiety (n=6)	Support during Ramadan (n=3)		General psychological (n=2)	Body dissatisfaction/weight and shape concerns (n=2)
Body dissatisfaction/weight and shape concerns (n=4)	Weight gain (n=2)		Restriction and/or rigidity around eating or exercise (n=1)	Anxiety (n=2)
Low mood (n=4)	Injury and physical activity (n=1)		Low mood (n=1)	Amenorrhea (n=2)
Restriction and/or rigidity around eating or exercise (n=2)			Family stressors (n=1)	General psychological (n=1)
Symptoms of Autism Spectrum Disorder (n=2)			Weight gain (n=1)	Self-esteem (n=1)
Family stressors (n=2)			Sleep (n=1)	Rapid weight loss (n=1)
Symptoms of Attention-Deficit/Hyperactivity Disorder (n=1)			Bullying (n=1)	Fainting (n=1)
Emotion regulation (n=1)			Motivation and/or support for COVID-19 lockdowns (n=1)	Weight management referral options (n=1)
School refusal (n=1)				Low iron (n=1)
Self-esteem (n=1)				Cholecystectomy (n=1)
Rapid weight loss (n=1)				Hair loss (n=1)
Weight gain (n=1)				
Excess weighing (n=1)				

Note. n=23 participants discussed more than one topic in additional support visit/s.

Conflicts of interest statement

Ms Kwok reported receiving travel support from Novo Nordisk to attend a conference outside the submitted work. Professor Baur reported receiving speakers' fees from Novo Nordisk and funds directed to the hospital cost centre, and serving as a member of the Eli Lilly Advisory Committee outside the submitted work.

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Author contributions

CK, NBL, LAB, SPG and HJ conceptualised and designed the study. CK, EH and LAB delivered the intervention. CK and HJ carried out the analysis. CK drafted the manuscript. NBL, LAB, SPG, and HJ provided supervision. All authors (CK, NBL, EH, LAB, SPG, HJ) interpreted the analyses and contributed to the manuscript by providing comprehensive feedback on multiple drafts. All authors read and approved the final manuscript.

Additional contributions

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