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Qualitative learning from an evaluation of the NHS Low Calorie Diet Programme

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Supporting remission of type 2 diabetes in the real world

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The Accelerated Access Review in 2016 highlighted the long pipeline from innovation or inception of research idea to implementation into routine clinical practice, a pipeline often lasting around two decades, and therefore made recommendations to Government on how to accelerate access for NHS patients to innovative medicines, medical technologies, diagnostics and digital products.[1] Following on from this, one of a handful of policy principles that guided actions on the part of the NHS England Diabetes Programme Team was that when high-quality evidence emerged, pathways to implementation should be expedited where possible.

The Long Term Plan for the NHS in England was published in 2019, and set the priorities for the NHS over the next 5-10 years.[2] The lead up to publication provided potential funding opportunities for new programmes that were to be included in the Plan. Among other suggestions, a recently published randomised controlled trial (RCT) formed the basis for a new programme of work suggested for inclusion by the NHS England Diabetes Programme team. The Diabetes Remission Clinical Trial (DiRECT) provided evidence that achievement of remission of type 2 diabetes (T2DM) might be possible for some with recent diagnoses of T2DM – 46% of participants at 12 months in the RCT setting – through Total Diet Replacement (TDR) using a micronutrient-complete but low-energy diet plus behavioural support.[3] The case for inclusion, initially as a pilot, was successfully made.

The DiRECT trial was delivered by healthcare professionals in primary care settings: it demonstrated the efficacy of TDR and behaviour change support compared to usual care in people with T2DM in causing some to achieve T2DM remission.[3] The Doctor Referral of Overweight People to Low Energy total diet replacement Treatment (DROPLET) trial comparing the efficacy of TDR with usual care in adults living with obesity, was published around six months later, and demonstrated that similar weight loss to that seen in the DiRECT trial could be achieved through delivery of similar interventions by commercial providers,[4] providing a potential mechanism for implementation at scale without being limited by healthcare professional workforce availability.

Following principles that had been applied in the development of the NHS Diabetes Prevention Programme,[5] the NHS England Diabetes Programme Team convened an expert advisory group to develop a service specification for delivery of the TDR intervention. The service specification could then be used to run a procurement for third party providers capable of interventional delivery across the country.[6]

The intervention begins with 12 weeks of TDR, followed by 4-6 weeks of food re-introduction, then weight maintenance support for up to 52 weeks. The initial pilot stages of the Programme involved 10 of the 42 geographical NHS administrative areas corresponding to Integrated Care Boards (ICBs) in England, with selection based on expressions of interest. Prior to the COVID-19 pandemic, three different models of delivery had been planned (face-to-face one-to-one, face-to-face group, and digital one-to-one), with each NHS site selecting their delivery model. However, due to constraints relating to the pandemic, launch was delayed by six months to September 2020 and planned face-to-face delivery approaches were changed to remote one-to-one or remote group delivery via video conferencing. The planned digital delivery model, through Apps or websites, remained unchanged. From April 2022, delivery switched to the originally planned delivery methods except for providers delivering the group model, which continued to be delivered remotely until June 2023.

The initial pilot phases of the Programme were able to demonstrate encouraging weight losses for participants, approaching those realised through the RCTs, and justifying further staged roll-out of the Programme.[7] A national procurement exercise has resulted in five providers, each capable of delivering the content of the service specification in any location across the country, being placed on a national framework. Latterly, each local area across England has been supported to run a 'mini-competition' to appoint the provider that best meets their local population needs from the national framework, each provider offering one delivery approach for each specific area. By April 2024, national roll-out across all 42

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ICBs will be complete, so that all areas of England will have access to the programme, enabling national communications to raise awareness amongst general practices who make referrals into the Programme, and among eligible individuals living with T2DM.

From inception, Programme evaluation was planned, with the NHS England Diabetes Programme Team performing the quantitative analyses in-house (monthly participant data feeds allow the team to iterate, respond to and improve the programme almost in real time), and with an NIHR-commissioned independent team, the Re:Mission team,[8] performing the qualitative and cost-effectiveness analyses. This collection of six papers published simultaneously online first in *The British Journal of Diabetes* describes the initial qualitative findings of the Re:Mission team. The NHS England team have produced a manuscript describing the initial quantitative analyses of weight changes and remission rates on the Programme, which is currently undergoing peer review and will be published separately.

Of the six accompanying papers, the first describes the qualitative evaluation methods employed;[9] the second,[10] third[11] and fourth[12] focus respectively on the TDR, food reintroduction and weight maintenance phases of the intervention; the fifth describes the findings of structured interviews with people who did not complete the intervention;[13] and the sixth presents participant experiences of the programme using both quantitative and qualitative data derived from four cross-sectional surveys, and examines differences by socio-demographic characteristics, delivery model and provider.[14]

Valuable learnings from the qualitative findings have already supported, and will continue to support, improvements in the programme, to better meet the needs of participants, as well as referrers, providers and health systems. With full national coverage now almost complete, enabling potential universal access, people living with diabetes, healthcare professionals, commissioners and organisations such as ABCD, PCDS and Diabetes UK can work together to ensure that the option of the NHS Type 2 Diabetes Path to Remission Programme is embedded into, and aligned with, routine T2DM care pathways across England, from the point of diagnosis.

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The Re:Mission study. Evaluating the NHS Low Calorie Diet pilot - an overview of service user data collection methods

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Abstract

Introduction: The National Health Service (NHS) Low Calorie Diet (LCD) pilot programme aimed to support people with type 2 diabetes (T2DM) to lose weight, reduce glycaemia and potentially achieve T2DM remission using total diet replacement alongside behaviour change support. The Re:Mission study seeks to provide an enhanced understanding of the long-term cost-effectiveness of the programme and its implementation, equity, transferability and normalisation across broad and diverse populations. This article presents an overview of the methods used in the Re:Mission study.

Methods and analysis: A mixed method approach was used to draw together service user insights from across longitudinal and cross-sectional online surveys and semi-structured interviews supported by a modified photovoice technique. Insights were captured from active service users across the three phases of the programme (total diet replacement, food reintroduction and maintenance) in addition to those discharged prematurely. Survey data were analysed using descriptive statistics and qualitative data were thematically analysed and interpreted through a realist informed lens to understand which aspects of the service work and do not work, for whom, in what context and why.

Results: Results from the study are presented elsewhere, with recommendations for policy practice and research.

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Background

Type 2 diabetes (T2DM) is now one of the leading causes of global deaths;[1] it affects 4.3 million people across the UK.[2] More than a quarter of adults in England live with obesity,[3] which is the most significant modifiable risk factor for developing T2DM.[4,5] However, obesity and T2DM do not affect all populations equally, with prevalence of both conditions increasing with age and area-level deprivation, and ethnicity. For Black and South Asian ethnicity, body mass index (BMI) >23 kg/m^2 indicates increased risk of T2DM and BMI >27.5 kg/m^2 indicates high risk of T2DM; comparable values of BMI for White ethnicity are >25 kg/m^2 and >30 kg/m^2, respectively.[6]

Modelled projections indicate that health service and wider societal costs associated with obesity and diabetes will escalate dramatically unless urgent action is taken.[7] The NHS Long Term Plan therefore pledged to provide a targeted support offer and access to weight management services for people with a diagnosis of T2DM and a BMI of $\geq$30 kg/m^2 (adjusted appropriately for ethnicity),[8] with the aim of significantly improving health, reducing health inequalities and cutting associated costs.

Systematic review and trial evidence has shown that a Low Calorie Diet (LCD) achieved through Total Diet Replacement (TDR) can lead to clinically significant weight loss and improvements in glycaemia, with some people achieving remission of T2DM.[9-18] Based on evidence from the two large UK trials (DiRECT and DROPLET),[15,16] a commitment was made by the NHS in England to pilot a LCD programme for people living with T2DM and overweight/obesity, offering TDR alongside behaviour change support. Given the large scale of such an intervention, a comprehensive evaluation of the translation and implementation of this intervention into real-world practice was critical.

The NHS LCD programme

In 2020, NHS England commissioned the LCD programme. It was piloted initially in 10 socio-demographically diverse sites across England (wave 1), with a further 11 sites added in 2022 (wave 2). NHS England provided a standard service specification,[19] which was delivered by a range of commercial service providers. In brief, the programme included 12 weeks of total diet replacement and 4-6 weeks of food reintroduction, followed by weight maintenance support until the end of the programme (52 weeks). Behaviour change support was

delivered via one of three delivery models: one-to-one, group or digital delivery via an App (each site was allocated one delivery model and selected a provider through a commercial procurement process). As the programme was launched during the COVID-19 pandemic, one-to-one and group support were initially delivered remotely, with in-person delivery starting in 2022. Eligibility criteria included: age of 18-65 years, T2DM diagnosed within the previous six years and BMI $\geq$27kg/m^2 (adjusted to $\geq$25kg/m^2 for Black, Asian and other minority ethnic groups).[20]

The Re:Mission study

The Re:Mission study aimed to deliver a coproduced, comprehensive qualitative and economic evaluation of the NHS LCD pilot, to be integrated with the NHS England quantitative analyses and provide an enhanced understanding of the long-term cost-effectiveness of the programme and its implementation, equity, transferability and normalisation across broad and diverse populations.[21] This special issue provides insights from the patient perspective, derived from the longitudinal and cross-sectional service user surveys and qualitative interviews, to address the following research questions:

- To what extent is the content of the NHS LCD programme understood and applied by service users?
- How do socio-demographic characteristics and service delivery model impact service user experience?
- Which aspects of the service work and do not work, for whom, in what context and why?
- How can the service be improved in the future, to enhance service user experience and ensure any inequities are addressed?

This article details the methodological approach taken using the Consolidated criteria for reporting qualitative research COREQ guidelines.[22] Findings from the studies detailed within this paper are reported elsewhere in this issue.[23-27]

Methods

The research team used a patient-centred framework aligned to the eight principles of patient-centred care,[28] working in coproduction with NHS England, the national LCD advisory group, and our public and patient involvement and engagement (PPIE) group (representing voices of lived experience from across our broad and diverse communities).[29] The Re:Mission study was underpinned by a realist informed approach, to help provide research-informed theories to determine how and why outcomes may differ for different people. The concept of realist evaluation has been summarised as: 'what works for whom in what circumstances and in what respects, and how?'.[30] Three different methodologies were used to inform the service user insight work: cross-sectional, longitudinal and withdrawing participant (service user) surveys and interviews.

Participant surveys

A short (~20 minute) online participant survey was codesigned and piloted with service users, to capture participant experience and outcomes during each stage of the programme (baseline, end of TDR, end of food reintroduction, end of maintenance and withdrawal); and to assess how these may differ by socio-demographics and delivery model. The data from each survey were anonymously linked (via a unique referral ID) to the sociodemographic, process and clinical outcomes data collected by NHS England as part of the LCD programme minimum dataset. Participants could complete the survey longitudinally (linked via unique referral ID) or cross-sectionally at any time point. Due to COVID-19 restrictions, the survey was made available via a secure encrypted online survey platform [Qualtrics, Provo, UT], with an option to complete over the phone (using a freephone number) in a language of choice, to ensure that language, literacy or IT accessibility were not barriers to participation. Invitations to participate in each survey was sent via LCD service providers at the relevant timepoint. Data analysis and findings from the survey are available.[26] All participants were invited to opt into a prize draw to win one of four £50 gift vouchers drawn at the end of each year.

Participant interviews

Data collection methods

Semi-structured interview schedules were codesigned and piloted with our PPIE group to gather in-depth participant insights across the programme stages. Participants were recruited to interview either on expressing an interest in the participant survey or on responding to an invitation sent via their service provider. Participants were invited to interview based on maximum variation sampling,[31] to gain representation from across different socio-demographic and service delivery models.

Three subsets of interviews were completed:

1) longitudinal, with a retention rate of 83%. The same participants were interviewed at the end of total diet replacement (12 weeks, n=30), end of food reintroduction (18 weeks, n=28) and end of weight maintenance (52 weeks, n=25);
2) cross-sectional, in order to capture insights from any socio-demographic groups or delivery models underrepresented in the longitudinal interviews. Participants were interviewed at 24 weeks (n=15);
3) withdrawal (n=10) to capture insights from participants who withdrew or were prematurely discharged from the programme.

Overall n=55 participants were interviewed in the study. Thirty participants were recruited to longitudinal interviews. The retention rate was 83%: 12 weeks (n=30), 18 weeks (n=28) and 52 weeks (n=25). Additional participants (n=15) were recruited to cross-sectional interviews and interviewed once at 24 weeks into their LCD programme journey. A further group of participants (n=10) were interviewed as they withdrew or were discharged prematurely from the LCD programme. All participants were previously unknown to the interviewers and were offered a £20 gift voucher as a thank you for their time after each interview.

Longitudinal interview data were collected between February 2022 and September 2023. The interview lasted between 38 and 105 minutes. Two researchers (KD, CH) conducted the longitudinal interviews. All participants were asked if they

consented for one of the PPIE team to co-interview. The interviews were led by the researcher, with the PPIE member asking follow-up questions and prompts. Eleven interviews were co-led by a researcher and a member of the PPIE team.

Cross-sectional interview data were collected between May 2022 and July 2023. The interview lasted between 40 and 67 minutes, and was led by two researchers (KK and CF). Withdrawal interview data were collected between June 2022 and June 2023 by KD; the interview lasted between 60 and 110 minutes.

Longitudinal interviews also included photo elicitation techniques: participants were offered a free tablet device, sent prior to interview, to take photographs, films or audio recordings which were shared with the researcher at the interview. Prior to the interview taking place, a photo prompt sheet which aligned to the interview schedule (and included safety guidance), was shared with all participants who agreed to take part in this element of data collection (n=21).

Data analysis

Interviews were conducted and recorded online using Microsoft Teams, transcribed verbatim and subjected to thematic analysis.[32] NVivo software (QS International Pty Ltd. Version 12) was used to assist the storing and organising of the data for all interviews. Longitudinal: 12-, 18- and 52-week data analysis was led by KK and CH. To inform the analysis process researchers (CH, KD, TB, KK, JM, SR) each familiarised themselves with transcripts from 12-week interviews that varied by delivery model, age and gender of service user and engagement with photo elicitation. A preliminary list of codes was identified by each researcher using the interview schedule as a deductive framework. Following a meeting to discuss the codes and agree an initial framework, each researcher inductively coded five transcripts which added codes to the initial list. This stage included a focus on the narrative that accompanied any images and recording, and a prompt marked to share the associated image with the team during the meetings. Researchers met again to discuss any additional codes. CH and KK revised the coding framework and used a sample of transcripts to check for additional meanings that were not initially included. KK performed the analysis with CH checking a sample of interviews.

Week 18 interviews were read multiple times by KK and were inductively and deductively analysed using the framework from week 12 and the interview schedules. CH read a sample of transcripts of the 18-week transcripts to check with the framework. KK coded the transcripts with the final framework. Analysis for the 52-week data followed the same process as 12-week data, with TB, JM, KK and CH each reading a sample of four transcripts which were coded against the 12- and 18-week frameworks. Any new codes were added and following discussion a revised 52-week framework was developed. KK then coded the transcripts.

Cross-sectional analysis was led by KK, who read all transcripts multiple times before conducting the thematic analysis. CH read a sample of transcripts to check for alternative meanings in the data. Themes were identified, defined, and consolidated into clusters to reveal higher-level patterns. The data was combined with the longitudinal data using NVivo software (QS International Pty Ltd. Version 12).

Withdrawal data analysis was led by KD, who read all transcripts multiple times before conducting the thematic analysis. CH read a sample of transcripts to check for alternative meanings in the data.

Key messages

- Trials show that Low Calorie Diets achieved through Total Diet Replacement can lead to significant weight loss and reduced glycemia, This study evaluates the translation and implementation into real world practice.
- Surveys and interviews with service users undertaken using a realist lens explored which aspects of the service work and do not work for whom in what context and why.

Results and dissemination

The findings from the study, with recommendations for policy, practice and research, are presented elsewhere: total diet replacement phase;[23] food reintroduction phase;[24] weight maintenance phase;[25] interviews with individuals who withdrew;[27] and the participant experiences survey.[26]

In addition there will be dissemination through a series of peer-reviewed publications, national and international conference presentations, alongside public facing blogs and vlogs on the Re:Mission study website,[33] accompanied by an illustrated journal-style summary of the final report and a short film documenting service user journeys through the photovoice materials.

Insights from the study have already informed the national roll out and new specification of the programme (now called the NHS Type 2 Diabetes Path to Remission Programme) and will continue to provide critical learning to inform ongoing service improvements.

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Ethical approval Ethical approval was received from the Health Research Authority (REF 21/WM/0126) and Leeds Beckett University (REF 107887 and 79441). Participants provided informed consent to participate in the Re:Mission study, including consent for publication. All participant data were anonymised and where photos have been used in publications or presentations, permission was sought from each participant.

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A fresh start with high hopes: a qualitative evaluation of experiences of the Total Diet Replacement phase of the NHS Low Calorie Diet Programme pilot

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Abstract

Background: The National Health Service (NHS) Low Calorie Diet (LCD) programme in England aims to support people with type 2 diabetes (T2DM) to lose weight, improve glycaemic parameters and potentially achieve diabetes remission. The programme pilot launched in 2020 using three different delivery models: one-to-one, group and digital via an App. Service users begin the programme with 12 weeks of Total Diet Replacement (TDR). This study aims to understand the experience of this TDR phase from the service user perspective.

Methods: This was a co-produced qualitative longitudinal and cross-sectional study, underpinned by a realist informed approach using semi-structured interviews and photovoice techniques. Service users (n=45) from the NHS LCD programme were recruited across the three delivery models and 21 pilot sites in England. Data were analysed using a thematic approach.

Results: Participant demographics were representative of the overall LCD pilot population sample and included experiences from a mix of delivery models and providers. Three themes were presented chronologically. 1) life pre-LCD: the LCD programme was viewed as an opportunity to reset eating behaviours and improve quality of life; 2) experience of TDR: flexibility in allowing supplementary non-starchy vegetables and adapting the flavour and texture of TDR products supported adherence; 3) looking ahead to food reintroduction: at the end of the TDR phase, weight and glycaemia had reduced, while subjective energy levels and mobility improved. Some participants were concerned about progressing to the food reintroduction phase and the possibility of weight regain.

Conclusions: The paper reports insight from the TDR phase of the LCD programme. The co-production of this work has resulted in several recommendations for policy and practice which have informed the national roll out of the programme.

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Key words: type 2 diabetes, obesity, Low Calorie Diet, qualitative, longitudinal, Re:Mission study

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Introduction

An overview of the 52-week Low Calorie Diet programme (now known as NHS Type 2 Diabetes Path to Remission Programme) has previously been reported.[1] Although clinical trials have demonstrated the clinical efficacy of Total Diet Replacement (TDR) approaches in driving weight loss, glycaemic improvements and diabetes remission in people with type 2 diabetes (T2DM) living with overweight or obesity,[2,3] there is a lack of qualitative data examining the service user journey. This is important given the wider population reach and delivery constraints within real-world implementation. It is therefore critical to explore service user experience, in order to understand what worked and what did not, for whom, why, and how the programme could be improved in the future.

This paper reports on the qualitative insights from a socio-demographically diverse range of service users after they completed the first phase of the programme. It explores their reasons for taking part in the programme, their experience of the first 12 weeks and their looking ahead to the reintroduction of food. This first phase of the programme comprises 12 weeks of following a diet composed solely of nutritionally-complete TDR products, alongside regular (a minimum of eight) behaviour change support sessions. The TDR products range in variety and can include soups, shakes and bars that provide a total energy intake of 800-900 kilocalories per day. When service users are unable to comply with full TDR, they may introduce a single meal of non-starchy vegetables, or substitute a single TDR meal for a nutritionally appropriate meal of no more than

300 calories. Fibre supplements are also provided to all service users during this phase, with advice to consume 7g per day.[4]

Methods

This article details the methodological approach taken using the COREQ guidelines, see the consolidated criteria in supplementary file 1 – online at www.bjd-abcd.com

Longitudinal interviews and photo elicitation were undertaken with 30 participants at the end of the TDR phase (12 weeks) (see participant characteristics summary table 1 in supplementary file 2 – online at www.bjd-abcd.com). An additional 15 participants were interviewed cross-sectionally at six months, to plug any gaps in terms of representativeness of the longitudinal population (see participant characteristics summary table 2 in supplementary file 2 – online at www.bjd-abcd.com). Any insights captured during the cross-sectional interviews that related to the TDR stage are also incorporated. All participants were recruited via the Re:Mission study survey or through an invitation from their service provider, and provided informed consent to participate.

Ethical approval was received from the Health Research Authority (REF 21/WM/0126) and Leeds Beckett University (REF 107887 and 79441).

Methods have previously been reported in full but, in brief,

Table 1. Participant characteristics at 12-week interviews

Characteristics		Longitudinal participants (n=30)	Cross-sectional participants (n=15)	Total number of participants (n=45)
Gender	Male	12 (40%)	6 (40%)	18 (40%)
	Female	18 (60%)	9 (60%)	27 (60%)
Age (years)	30-34	1 (3%)	0 (0%)	1 (2%)
	35-39	4 (13%)	2 (13%)	6 (13%)
	40-44	3 (10%)	2 (13%)	5 (11%)
	45-49	3 (10%)	2 (13%)	5 (11%)
	50-54	6 (20%)	2 (13%)	8 (18%)
	55-59	5 (17%)	3 (20%)	8 (18%)
	60-65	8 (27%)	4(27%)	12 (27%)
Service provider	SP1	1 (3%)	1 (7%)	2 (4%)
	SP2	19 (63%)	5 (33%)	24 (53%)
	SP3	7 (23%)	3 (20%)	10 (22%)
	SP4	1(3%)	4 (27%)	5 (11%)
	SP5	2 (7%)	2 (13%)	4 (9%)
Delivery model	Face-to-Face 1:1	3 (10%)	2 (13%)	5 (11%)
	Remote 1:1	2 (7%)	4 (27%)	6 (13%)
	Remote Group	22 (73%)	6 (40%)	28 (62%)
	Digital	3 (10%)	3 (20%)	6 (13%)
Ethnic group †	White British or White Mixed British	25 (83%)	10 (66%)	35 (78%)
	Asian/Asian British	3 (10%)	0 (0%)	3 (7%)
	Black/African/Caribbean/Black British	1 (3%)	2 (13%)	3 (7%)
	Mixed or Multiple Ethnic Group	1 (3%)	1 (7%)	2 (4%)
	Other Ethnic Group	0 (0%)	1 (7%)	1 (2%)
	Prefer not to say	0 (%)	1 (7%)	1 (2%)
IMD quintiles §	1 (most deprived)	11 (37%)	2 (13%)	13 (29%)
	2	4 (13%)	3 (20%)	7 (15%)
	3	6 (20%)	3 (20%)	9 (20%)
	4	3 (10%)	4 (27%)	7 (15%)
	5 (least deprived)	6 (20%)	3 (20%)	9 (20%)

† The ethnic group classification as used by the Office for National Statistics in the 2021 census

§ The Index of Multiple Deprivation (IMD) score is as absolute measure of deprivation that allows for Lower Super Output Areas (LSOAs) in England to be ranked and subsequently classified into five quintile bands. Quintile 1 is the 20% most deprived LSOAs in England, while quintile 5 is the 20% least deprived LSOAs.

semi-structured interviews were conducted online using Microsoft Teams:[1] 12-week longitudinal interviews were conducted by KD and CH, who were supported by three Patient and Public Involvement (PPI) group members (KC, JT, AO),[5] where PPI support was requested by the interviewee (n=11). Twenty-one of the 12-week interviewees shared photos, films, or audio recordings with the researcher via a secure file transfer link and explained the meaning behind the photos, films or audio recordings during the interview. KK and CF undertook the six-month cross-sectional interviews.

All interviews were transcribed verbatim and subjected to thematic analysis.[6] Researchers (CH, KD, TB, KK, JM, SR) independently familiarised themselves with five transcripts from the 12-week interviews. An initial list of codes was identified by each researcher using the interview schedule as a deductive framework and this was discussed as a group. This led to the development of an initial framework from which each researcher then inductively coded five transcripts and added any additional codes. This stage also included a focus on the narrative that accompanied any images and recordings. All researchers met again to discuss additional codes, and CH and KK revised the coding framework accordingly. Cross-sectional interviews were coded by KK and any data relevant to the TDR stage were coded and included within the 12-week framework. Data were stored and organised using NVivo Software (QS International Play Ltd. Version 12.6).

Results

Participant demographics were representative of the overall LCD pilot population sample, according to interim data presented to the advisory group in summer of 2023. Participant characteristics are shown in Table 1.

Themes from the interviews are presented chronologically through the patient journey.

Life pre–Low Calorie Diet programme (Table 2)

Interviewees were asked to reflect on what their life was like prior to starting the LCD programme. For most participants, living with obesity and T2DM severely affected their daily lives. Physical health impacts included lethargy, loss of mobility, oedema, headaches, frequent urination and other broader health conditions. One participant shared a picture of the chair they had slept in for three years as a result of their weight and health conditions (see supplementary file 3 – online at www.bjd-abcd.com). Psychosocial impacts of living with obesity led to avoidance of social situations, increased self-reported anxiety and depression. Participants reported using diet, exercise and medication to control their T2DM and manage their weight. Participants attributed their T2DM to a range of dietary habits and behaviours, from struggling to eat regular healthier meals, over- consumption of food and 'bad habits' exacerbated by the COVID-19 lockdowns. Weight cycling (losing and regaining weight) was a prominent theme in nearly all interviews. Poor mental health, lifelong emotional eating and perceived addiction to food were often cited as a response to manage anxiety or stressful situations. Exercise routines were reported to be impeded by barriers such as health problems, access, cost and work, with a lack of exercise cited as leading to further weight gain. Medications for T2DM and other co-morbidities were reported as compounding efforts to lose weight.

Most participants were prescribed medication to manage their T2DM and they reported unpleasant side effects. The aspiration of not requiring diabetes-related medication was viewed as a key driver for starting the LCD programme. Motivations for starting the programme also included the potential for improvements to current health and fear of future poor health, often linked to having seen premature morbidity in family members.

The LCD programme was viewed as an opportunity to reset

Table 2. Theme one - Life pre–Low Calorie Diet programme

Sub theme	Illustrative quote
Impact of diabetes and excess weight on the lives of the participant	*"I started to lose sensation in my feet, and it was beginning to feel if I say more real, more life threatening I suppose, I felt very, very unwell, really, really unwell." (P18)*
	"I felt quite embarrassed over Christmas when I went to a couple of parties, and I got to a point where I stopped going. Being Asian and we have loads of family get togethers and I started looking for excuses not going. I became quite shallow, I started isolating myself. I wouldn't buy clothes because of my size. I didn't feel comfortable with the way I looked, and I was making excuses." (P28)
	"I cook healthily. I cook balanced diets, I've been cooking since I was 10 years old. But my issue with my mental health was that I, was my triggers, anxiety and stress, will trigger comfort eating and then also the medication that I've been on for, for now, for my other conditions, they basically have put the weight on. So although I was tailoring and changing and modifying meals, I was still finding I was comfort eating." (P15)
Motivation to join the LCD programme	*"I felt both motivated to do something about it, but I also felt incredibly like I'd failed miserably, I've been struggling with this disease by that stage for at least 2 ½ years I think, and I just wasn't able to control it. So, I felt like a complete failure. I felt like there was nothing I could do that could stop it or change it. Yeah it was just getting progressively worse. But I was motivated." (P16)*
	"I'm not going back on those tablets. It doesn't matter what I need to do. So, if I need to starve for three months…I will starve for three months. If I have to eat 800 calories, 600 calories for the rest of my life I will. But I'm not going back on those tablets." (P65)
	"I got to the realisation that I am essentially killing myself. You know that, that little bit of knowledge can scare you. Scare the bejesus out of you sometimes can't it…I got to the realisation that if I carry on, I am gonna kill myself. I can't keep doing this." (P56).
	"You know the programme itself will help and it will give you that good kick start, but you got to have it in your head that you're going to do this and stay positive." (P114, 6M)

Table 3. Theme two - Experience of the Total Diet Replacement

Sub theme	Illustrative quote
TDR products-adaptations	*"It was just seasoning it with garlic and then a few sort of like skinny, have you heard of Skinny co, the brand as well, they've got quite a few that are zero calorie and low sugar and things. So I've got a couple of flavourings on them, again, just to get something different and one of them was like a tikka and there was another one which is like barbecue again, just nice to put on things like that to make you feel like you're still sort of having something." (P21)*
TDR products-quality and variety	*"I needed to taste all six and then choose, but I could only have six tubs out of six. So I could have one each, or I could double on something. But then you later on think and reflect after you've already placed the order that you can't have any milk, so you have to use one of the shakes in your coffee, which is what I've done. So in hindsight, I would have chosen 2 chocolate, one banana and or one strawberry and then the three soups. So now I'm stuck basically with loads of strawberry and banana shake that I don't particularly want, but, that's the, that's the only glitch I think. I think you don't acquire understanding of what you're getting until you actually start." (P57)*
Motivation during TDR phase-individual level	*"I've probably not had the healthiest relationship with food for a number of years. So actually, to me, taking the food away was almost like the opportunity for a fresh start for an opportunity to say, OK well let's get some weight off, let's get you to a healthier place and then actually lets come back and reset." (P70)*
Motivation during TDR phase-improvements to day-to-day living	*"I couldn't even see my feet before, let alone reach them. So I've actually been able to have a pedicure, have nail varnish on my feet in quite a few years. Yeah. So that was the first time I have applied it. I've actually been able to. I can now bend down and touch my feet." (P57)*
Peer support-during and outside of the group session	*"We've all had difficult issues. There's been personal circumstances that have affected us independently and throughout, and we've been honest and candid with each other in the group to the point whereby something terrible has happened, it's it got discussed and then we offer support and we, we communicated and we, you know express words of kindness and all, we just supported each other. So I'm grateful, very grateful that we had that group because if it wasn't for that group and that communication with the other participants in our WhatsApp group, I think things would have been a lot more different. And I might not even finished the phase, the first 12 weeks." (P15)*

emotional responses and relationships with food by taking a complete break from normal food preparation and consumption. Readiness to change was perceived by participants to be essential in the run-up to starting the LCD programme. Participants shared feelings of excitement for the future, anticipation of better health, quality of life, and desperation to change their current situation. The TDR element of the programme gave rise to expectations of rapid initial weight loss accompanied by requirements to stop glucose-lowering medications.

Experience of the Total Diet Replacement (Table 3)

Participants from all delivery models were provided with four TDR products each day for 12 weeks. The perceived quality and options of products varied across the providers: some offered a wide range of flavours and options (n=97 products), while others had a more limited selection (n=6 products). The acceptability of TDR products was influenced by several factors such as taste, variety, palatability of taste and texture, and cultural familiarity. Hunger and cravings were common experiences and the addition of non-nutritive items like teas and chewing gum was common practice. Participants were provided with fibre supplements, and some reported relying on them to manage constipation. Participants often adapted the taste of TDR products by incorporating spices and sugar-free syrups (see supplementary file 3 – online at www.bjd-abcd.com – for images). Participants also found ways of adapting the form of TDR products by turning shakes into ice lollies or baking the mixture to make macaroons. Allowing supplementary foods such as non-starchy vegetables or calorie-controlled meals as a substitute for a single TDR meal provided important flexibility which helped individuals stick with the programme. One provider allowed participants to use 'joker cards' (one day of 'normal' food in the 12 weeks). Adherence was also influenced by the sense of control and convenience that the TDR products offered.

Participants reported rapid improvements in their weight and blood glucose levels during the TDR phase. Some reported significant levels of weight loss of up to 20% of starting body weight. Other reported outcome measures included feelings of increased energy, mobility, functional fitness and improved self-esteem. Participants shared pictures of things they could now do because of the weight loss such as painting their toenails (see supplementary file 3 – online at www.bjd-abcd.com). Conversely participants also reported some negative impacts such as constipation, tiredness and feeling cold.

The support of family and friends was discussed positively as a source of support and motivation during TDR. However, social isolation and avoidance of social situations where food was concerned was also common. In the home environment some participants talked about their family eating in other rooms so not to tempt them with food, and others had to continue to cook meals for their family. Where available across the different delivery models, some participants found peer support from other LCD service users helpful, whether gained through WhatsApp groups (group delivery model) or online community forums (group and digital model). On some occasions, particularly in group sessions, some people reported that the peer support groups were not cohesive. The need for some form of peer support was highlighted within the 1:1 delivery model.

Looking ahead to food reintroduction (Table 4)

The second stage of the LCD programme (weeks 12-18) was food reintroduction (FR), when service users were supported in their transition from TDR products back to normal meals. Participants interviewed at 12 weeks shared their hopes and

Table 4. Theme three - Looking ahead to food reintroduction

Sub theme	Illustrative quote
Looking forward-transition anxiety around food reintroduction	*"So I'm a bit worried that it's a bit like once you pop you can't stop, but I'm just gonna keep like of an evening, right I've had dinner now, what else can I eat and just eat everything in sight." (P42)*
	"I think it's a lot of the people is we're terrified that the weight's gonna go back up again, you know. We're gonna slip into bad habits, you know, and they are sort of well, you know, I mean. I'm not too bad, but it's I know other people say it's very easy to start having munchies, like chocolate bars or something like that, you know, just, you know, to supplement your diet which you don't really need. You just take it out of habit or because it's something to do. And that's the worst thing they're worried about because the TDR diet was so strict that you know, you knew exactly what you were eating and you know what kind of. When you go back to food, it's very, very easy and you're very worried that you're gonna, you know, slip into the same old bad habits again yeah and put weight on." (P34)
Looking forward-continued TDR product use	*"I will continue using them at least for this programme. I want to carry on that way 'cause I've still I still want weight that I want to lose. I don't want to end up back on the metformin. I want to obviously lose like to say the blood pressure tablets and stuff like that. So if that's helping then I'll continue with that until next June maybe when the programme finishes and then decide then if I need to continue with them." (P54)*
	"It's supposed to be 3 TDR products and an evening meal for me at the moment. But some days, I'll be honest, I'm still just having the four products. I think I shall always, even when I introduce food, I think the way I think at the moment is I shall probably just continue to have a milkshake in the morning or porridge and a bar of an evening. Because even after an evening meal, I've just got a routine where I know I've got my bar when I'm sat down and watching the telly. And it's just something that I have to look forward to. Rather than a packet of minstrels or something." (P7)

concerns as they embarked on this next stage of the programme. Expectations around meeting weight loss targets and improving blood glucose levels were high, due to the rapid improvements experienced in the first 12 weeks of TDR. However, the prospect of reintroducing meals also drove apprehension that weight loss would slow, and there could be weight regain, thereby undoing the positive changes they had experienced. Participants discussed how the control they felt whilst using the TDR products would be removed, as they had to make choices about food again. Participants were concerned about the challenges of planning meals for themselves and others around them who might want to eat differently. Participants talked about the strategies they were planning to use to manage their diets during FR, such as spreadsheets to record calories and meals and food shop planning. Discussions also focused on the potential continued use of TDR products, with some participants indicating they might continue using TDR products (outside the programme specification) for convenience and to sustain weight loss.

Discussion

In this paper we have explored the experiences of participants who completed 12 weeks of TDR. Their experiences of living with excess weight and T2DM influenced their motivation to take part in the programme. The reset that participants sought from the TDR, and their associated expectations of changes to health and quality of life, were similar to the expectations of people seeking other weight loss interventions and bariatric surgery.[7] Participants were very focused on weight and glycaemic outcomes during the TDR phase, and many experienced immediate positive effects related to starting the TDR products. The general positivity at this early stage is perhaps not surprising given the rapid weight loss and improvement in glycaemia that are reached.[8] Participants' focus appeared not to be on weight loss per se, but on weight loss to control T2DM, which can help improve long-term weight maintenance.[9] Participants also discussed other psychosocial issues that were important, as well as personal motivation related to the desire to improve associated health outcomes related to weight loss. This finding was also reported in the qualitative evaluation of the DiRECT study,[10] and may support long-term management: this is improved when motivations are aligned with personal values and preferences,[11] and when patient-reported outcome measures are used.[12]

Personal motivation and sense of control were constantly challenged in everyday life, with adaptations to home life and social situations commonplace whilst undertaking TDR. These findings reflect the importance of recognising the wider environment and systems that influence behaviour.[13] Placing behaviour inside the system rather than just on the individual allows us to identify how the individual and system interact,[14] and to move away from an individual focus to more holistic person-centred care.[15] The identified importance of peer support also aligns with evidence from other peer support interventions that are associated with significant short-term weight loss.[16,17]

Participants reported that using TDR gave them a sense of control over their energy consumption that they struggled to manage within their standard diet. Participants reported feeling anxious about food reintroduction, with some participants planning to continue using TDR products outside the programme specification. A person-centred approach which seeks to understand the intentions and motivations of individuals who plan to continue to use TDR products could reduce anxiety and provide strategies to discourage longer-term TDR usage. Previous analyses have shown binge eating and emotional eating to be prevalent in this population.[18] Although it is recognised that extreme restriction and control over food are risk factors and symptoms of disordered eating,[19] the long-term impact of TDR programmes in this context is not yet well established and is a key area for future research.

Overall, the evidence generated from the interviews shows

the importance of taking a person-centred approach if we truly want to help people living with obesity and T2DM to maintain a healthy lifestyle.

Strengths and limitations

This is the first qualitative study to explore the lived experiences of service users who have attended the NHS LCD programme. Despite repeated efforts to engage service users from all service providers, this was challenging as the level of engagement in the evaluation process varied hugely between providers. A limitation of the data reported in this paper was the low number of participants from diverse minoritised ethnic groups. Barriers to compliance with the programme disproportionately impact people from minoritised ethnic groups. We have some understanding of how ethnicity and socioeconomic status intersect. This was presented in the paper by Dhir,[20] which interviewed 12 services users identifying as South Asian ethnicity and through the perceptions of the commercial providers.[21] Representation was however strengthened by the addition of reflections from the cross-sectional data. This paper presents outcomes at 12 weeks into a 52-week programme and, as such, the positive outcomes experienced at this point may not be reflective of outcomes reported at the end of the LCD programme. The use of photovoice methodology gave power to the participants in the research process as they used prepared visual methods and audio recordings to illustrate their points.

Recommendations for policy and practice

1. Opportunities to encourage peer support in different forms (web-based, online) should be routinely promoted by providers.
2. TDR sessions need to be person-centred, recognising that a one-size-fits-all approach is not readily amenable to meeting the individual needs of service users.
3. Including Patient Reported Outcome Measures (such as increased energy, feeling happier) as well as clinical outcome measures in service monitoring and data collection may aid motivation and expectation of outcomes from the service user perspective.
4. Coaching sessions during the TDR phase should prioritise supporting readiness for food reintroduction, including support for behaviour change, targeted support regarding emotional or disordered eating, managing expectations and addressing fears regarding weight gain and loss of control.

Conclusions

Reducing the biopsychosocial impacts of living with T2DM and excess weight are a motivator for people starting the LCD programme. The experiences of people at the end of the TDR phase are largely positive, with service users reporting significant weight loss, improved glycaemia and better quality of life. TDR provides control and structure for people who seek to change their eating behaviours. As participants begin to transition from TDR, some reported experiencing anxiety regarding reintroducing food and how this may impact on weight and blood glucose. This co-produced study sought to explore the experience of service users at the end of the first 12 weeks of the LCD programme. Several of the recommendations for policy and practice have already informed the national roll out of the programme and have been incorporated into its new specification.

Key messages

- Previous experiences of living with excess weight and type 2 diabetes can influence motivation to take part in the Low Calorie Diet programme.
- The prospect of food reintroduction following the 12-week Total Diet Replacement phase is concerning for individuals.
- Importantly, a person-centred approach is required across all delivery models to understand the context of individuals' experiences of weight and type 2 diabetes both before and during the programme

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participant data were anonymised and where photos have been used in publications or presentations, permission was sought from each participant.

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"Trying to make healthy choices": the challenges of the food reintroduction phase of the NHS Low Calorie Diet Programme pilot for type 2 diabetes

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Abstract

Background: The food reintroduction phase of the NHS Low Calorie Diet (LCD) programme aims to support service users to reintroduce food gradually back into their diet. Understanding experiences of food reintroduction from a broad and diverse range of service users is critical in helping to improve service delivery and commissioning and equity in care.

Methods: This was a co-produced qualitative study underpinned by a realist informed approach, using interviews and photovoice techniques. Service users (n=43) of the NHS LCD Programme were recruited from three delivery models across 21 pilot sites in England. Data were analysed using a thematic approach.

Results: The food introduction phase required control and planning that challenged the behaviours of participants. Around a third of participants continued use of Total Diet Replacement products, or considered doing so, for convenience and to maintain calorie control. The coach–service user relationship was important to understanding of session content and translation into behaviour change. Physical activity increased during this phase, which contributed to positive health outcomes.

Conclusions: The paper reports insights from the food reintroduction phase of the LCD programme. Key messages include the need for increased frequency of support and the need for tailored and culturally representative education.

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Introduction

This is the second of three linked papers that follow the journey of service users through the NHS Low Calorie Diet (LCD) Programme.[1] This paper focuses on service users' experiences reported at 18 weeks, which is the end of Food Reintroduction (FR), the second phase of the programme. Full programme details are reported in Homer *et al*.[2]

The FR phase of the LCD programme aims to support service users to gradually re-introduce food back into their diet using a stepped approach.[1] During this phase, service users reduce the number of daily Total Diet Replacement (TDR) products from four to zero over the course of four to six weeks, whilst introducing healthy meals into their diet and attending fortnightly behaviour change support sessions. The NHS England LCD programme service specification[3] states that by the end of FR, service users should no longer be using TDR products, and should be consuming a nutritionally balanced diet that is appropriate for their individual nutrition needs, preferences and traditions. In contrast to the TDR phase, in which additional physical activity is not actively encouraged, service users in the FR phase are supported through goal-setting and educational resources to be physically active to achieve their weight maintenance goals, as recommended by NICE guidance. Understanding service user experiences helps to understand what works (and what doesn't), for whom and why. These insights are critical in informing the development of equitable service delivery and commissioning.

Methods

This article details the methodological approach undertaken using the COREQ guidelines, see supplementary file 1 – online at www.bjd-abcd.com

Longitudinal interviews and photo elicitation were conducted with a sample of 28 participants from the original 30 interviewed at 12 weeks.[1] The two participants not interviewed withdrew from the study for personal reasons. The experiences of service users who withdrew from the programme are reported elsewhere.[4] Eighteen people also participated in photovoice data collection methods as described by Homer *et al*.[2] Interviews were conducted and recorded online using Microsoft Teams and lasted between 38 and 90 minutes. Two researchers (KD, CH) conducted the interviews, with six interviews also supported by members of the Re:Mission patient and public involvement team.

Interviews were transcribed verbatim and analysed thematically.[5] KK led the initial coding of the 18-week interviews deductively and inductively using the 12-week thematic analysis framework. Additional codes from the 18-week data were added to the framework. CH cross-checked a sample of transcripts and, following discussion between KK and CH, a final thematic framework was developed and used to undertake the final coding. Data were stored and organised using NVivo Software (QS International Play Ltd. Version 12.6).

Data from cross-sectional interviews (n=15) interviews conducted with participants at six months into the LCD programme (see references 1 and 2 for more information) relating to participant experience of the FR phase were also included in this analysis. These interviews aimed to expand the diversity of experiences by collecting data from population groups or delivery models that were not well represented in the longitudinal interviews.

Table 1. Participant characteristics at 18-week interviews

Characteristics		Longitudinal participants (n=28)	Cross-sectional participants (n=15)	Total number of participants (n=43)
Gender	Male	11 (40%)	6 (40%)	17 (40%)
	Female	17 (60%)	9 (60%)	26 (60%)
Age (years)	30-34	1 (4%)	0 (0%)	1 (2%)
	35-39	3 (11%)	2 (13%)	5 (12%)
	40-44	3 (11%)	2 (13%)	5 (12%)
	45-49	3 (11%)	2 (13%)	5 (12%)
	50-54	6 (21%)	2 (13%)	8 (18%)
	55-59	4 (14%)	3 (20%)	7 (16%)
	60-65	8 (28%)	4(27%)	12 (28%)
Service provider	SP1	1 (4%)	1 (7%)	2 (5%)
	SP2	18 (64%)	5 (33%)	23 (53%)
	SP3	7 (25%)	3 (20%)	10 (23%)
	SP4	1 (4%)	4 (27%)	5 (12%)
	SP5	1 (4%)	2 (13%)	3 (7%)
Delivery model	Face-to-Face 1:1	1 (4%)	2 (13%)	3 (7%)
	Remote 1:1	2 (7%)	4 (27%)	6 (14%)
	Remote Group	22 (78%)	6 (40%)	28 (65%)
	Digital	3 (11%)	3 (20%)	6 (14%)
Ethnic group†	White British or White Mixed British	23 (82%)	10 (66%)	33 (77%)
	Asian/Asian British	3 (11%)	0 (0%)	3 (7%)
	Black/African/Caribbean/Black British	1 (4%)	2 (13%)	3 (7%)
	Mixed or Multiple Ethnic Group	1 (4%)	1 (7%)	2 (5%)
	Other Ethnic Group	0 (0%)	1 (7%)	1 (2%)
	Prefer not to say	0 (0%)	1 (7%)	1 (2%)
IMD quintiles§	1 (most deprived)	11 (39%)	2 (13%)	13 (32%)
	2	4 (14%)	3 (20%)	7 (16%)
	3	5 (18%)	3 (20%)	8 (18%)
	4	3 (11%)	4 (27%)	7 (16%)
	5 (least deprived)	5 (18%)	3 (20%)	8 (18%)

† The ethnic group classification as used by the Office for National Statistics in the 2021 census

§ The Index of Multiple Deprivation (IMD) score is as absolute measure of deprivation that allows for Lower Super Output Areas (LSOAs) in England to be ranked and subsequently classified into five quintile bands. Quintile 1 is the 20% most deprived LSOAs in England, while quintile 5 is the 20% least deprived LSOAs.

Ethical approval was received from the Health Research Authority (REF 21/WM/0126) and Leeds Beckett University (REF 107887 and 79441).

Results

Participant demographics across the longitudinal and cross-sectional interviews were representative of the overall LCD programme, according to interim data presented to the advisory group in summer of 2023. Participant characteristics are shown in Table 1 and supplementary file 2 (online at www.bjd-abcd.com).

Five core themes were derived from the findings: 1) navigating challenges and embracing enablers in the FR stage; 2) continued use of TDR; 3) the importance of clear person-centred session content; 4) the need for provider support; and 5) the benefits of physical activity.

Navigating challenges and embracing enablers in the FR stage (Table 2)

Participants reported the practical, physical, social and emotional aspects of FR. Practical challenges included changes in food shopping routines and responsibilities for home cooking and meal planning. Physical changes include changes to bowel habits, including reliance on medications to manage constipation. Whilst participants were looking forward to going out to socialise and eat with others (as this was restricted during the TDR phase), they discussed the challenges of making healthy food choices from limited menus or having to influence the choice of place based on finding something they could eat. They also reported how the TDR phase gave structure to their energy intake and provided a sense of control from not having to make food choices. This control was later challenged by needing to reintroduce food, with some participants feeling that TDR was easier to manage than healthy eating. Many participants reported feeling empowered and more mindful regarding healthy food choices, although some described anxiety about the possibility of returning to previous unhealthy habits and difficulties with portion control.

Participants were encouraged to reach and sustain weight loss targets during the programme. However, some had not met these targets by the end of the TDR phase and were seeking further weight loss, while others were aiming to sustain a particular weight goal as they transitioned during this FR phase. Apprehension regarding weight regain was commonly discussed.

Continued use of TDR (Table 3)

By the end of the FR phase, 15 (35%) of the 43 participants (nine females and six males aged 40-65) were either actively using TDR products or expressed an intention to continue doing so. The reasons for participants' continued use of TDR included convenience and its effectiveness in helping them stick to their dietary routines. It also served as a compensatory measure in instances where they had eaten foods perceived as unhealthy. Some participants had identified other LCD brands they could purchase privately; this was not always discussed with their coach. Several participants articulated their intention to use

Table 2. Theme one - Navigating challenges and embracing enablers in the FR stage - quotes

Sub theme	Illustrative quote
Lack of structure, challenges of planning, preparing meals, and cooking	*"Week 2, two shakes two meals, I'm struggling. I am really finding it hard to go back to food, trying to make healthy choices, eating stuff that I probably shouldn't be eating or eating more than I should be. Knowing that I've got to control my portion sizes but because I'm eating food it seems easy to lapse and part of me's just like oh my God give me back the shakes, it's just so hard." (P18)*
Physical, social and emotional impact during food reintroduction	*"My one big issue is my constipation. I'm just not regularly going to the toilet. I mean, I don't think I've been for about six days now properly, and that's a niggle and a worry. And I did go to a doctor and they did give me something for it and it doesn't seem to be working. Some tablets that supposed to soften your stools and make you a bit more regular, but it's not working. So I'm worried about that. So that's at the back of my head." (P82)*
	"There are challenges, particularly when you go out. If you go out with friends, the temp, it's not really a temptation because I've got a good mindset now I think, I look at everything, and it's really helped me because a lot of meals now when you go out have got the calorie content on the menu there. So you can choose it and think I'll go for the healthier option. But it's difficult sometimes if you go out to a nice restaurant and either the calories are not on the menu there or they're very rich meals, you know rich, or think it's fish and chips or it's going to be some big, you know some lasagne or something like that so you think well that's gonna be bad, but you get used to it really." (P114)
Concerns about returning to previous habits	*"Initially I started to have small amounts and then one thing led to another. I went back to my old habits of eating. So over the last five weeks, I really have struggled to find a routine that I enjoy cooking or the food that I like. It's, yeah the food that I enjoy is the wrong type of food and I've not got to. That change, my mindset it's not right yet. I'm struggling." (P28)*
Emotional challenges and anxiety about food reintroduction	*"I was eating a lot in one go, and I think that is wrong. And I think for me is I have to have breakfast, I have to have lunch but keep within the limits. And mentally I think I wasn't ready for or prepared enough for food reintroduction. And what [coach] said is actually quite, yeah, because before I don't have to think about food, I was secure, safe, I had my shakes and I was losing weight. But then suddenly oh, I have to do this and get plans and sort myself out. I think I wasn't prepared for it mentally ." (P125)*
Fear of weight gain	*"My weight is creeping up since I came off the full liquid part of it and introducing food. I'm not controlling it properly and I don't want to, because if I'm controlling it properly, where's the pleasure in life? But I hate not having that control. And I mean, I had, I said 85 kilogram was my target, I wanted it to be 80 to 83. I touched 83. I'm sitting at 85, 86 at the moment, which is I feel a failure at the moment, I need to get it down another two." (P82)*
	"I think it's that kind of fear that oh I've lost all this weight and now I'm gonna put it all back on 'cause I'm gonna start eating again. So that was really supportive to have someone you know sort of every week reminding you that it was OK and you're doing alright." (P70)

Table 3. Theme two - Continued use of TDR – quotes

Sub theme	Illustrative quote
TDR use for convenience and structure	*"I still wasn't comfortable with the introducing the food and it, to be honest, I'm still eating a couple of TDR products in the day and I'll just have a main meal. Some days I'll have more than one meal, but they're trying to encourage me to completely move away from TDR but I haven't." (P7)*
TDR use to support weight loss or disordered use of products	*"And then there are other supplements you know, available as well. Other food replacement supplements too that are available. But yeah, typically to compensate if I feel that I've eaten too many sweet things or too many starchy things and I haven't really been able to do as much activity or exercise I'd like to do, then I would incorporate that." (P43)* *"So now again, now and again I will have that as a replacement meal. It's very much sort of a dynamic situation because it really depends if I feel I've eaten too many starchy and sweet things and that I need to cut back." (P43)*
TDR use to combat hunger	*"But shakes yeah definitely is something that I'll continue with because I've found them so good and so sort of like appetising that they, they have well personally for me they have took the hunger pangs away, yeah." (P54)*
Awareness of the reset package and lack of intention to use TDR products	*"I was grateful. I didn't think to do that but when they called I said yeah, you know what, I'm going to try again and maybe I need a little bit more support. And to go back on the reset was quite good because I get my head in the right state, you know, in the right way of thinking and thinking about the mistakes I've done. Thinking what, what I can do better next time and that give me the time to, to reflect, you know, the past, the future and yeah, it was a god sent thing." (P125)*

TDR products as a fallback mechanism in instances where they experienced sensations of hunger. Additionally, some participants reported using TDR products as a mechanism to aid future weight loss if they hadn't hit their intended target, or to manage any future weight regain. This has been implicitly reinforced by the programme including the offer of four weeks of 'rescue' TDR (termed by some providers as 'reset') if there was weight regain of more than 2kg during the weight maintenance phase.

The importance of clear person-centred session content (Table 4)

Across all delivery models, the sessions included a structured programme of content, intended to be delivered using a person-centred approach and to provide relevant information and behaviour change support at key points. During the FR interviews, participants reflected on the information they had received to support them with the FR phase and what was missing. Some, but not all, providers offered tailored dietary information for cultural food practices and support for managing FR during religious festivals (such as Ramadan). The interview data also suggested varying support to address emotional eating.

Participant understanding of session content varied. For some people the level of explanation regarding food types and macronutrients was sufficient, whereas others reported that they didn't understand the content delivered during sessions or provided in the additional resources, and therefore struggled to implement this knowledge into their life. Participants who were in the group delivery model reported that they had insufficient opportunity to ask questions and were sometimes unable to speak to their coach to check understanding outside

Table 4. Theme three - The importance of clear person-centred session content – quotes

Sub theme	Illustrative quote
Accessibility of information	*"It was all a bit technical. So there was a lot of protein. How many, how much protein should I have? And I'm like literally like I ain't got a blooming clue, you know. And I know I probably should have learned it somewhere along the way, but I felt oh God, I should know this, I don't. You know, and I panicked a little bit. And then I thought, you know what, I don't know it. I don't know, you know. So maybe it was a bit too, I don't know, scientific. Maybe that's yeah that's maybe the word. It needed to sort of be a little bit less. I mean the scientific stuff I couldn't, I don't care, you know, just tell me what I can and can't have or what the sorry, the government or the health people advise you to have. Don't make it all scientific, 4 grams of this, you know, like I'm trying to work out this week how many grams of protein based on what weight and I don't care you know. So that I sort of switch off a bit after, when it gets a bit boring and a bit scientific I switch off. I don't remember much conversation about food, to be honest." (P18)* *"There is something that I'm gonna be bringing up in the next session when the regular mentor is there because you know all of us in the group have different conditions, have different disabilities, have different mental health issues or mental health conditions. And we have struggled and some have struggled really badly and others but we've been supportive to each other. And I just wanna, I'm gonna raise it up in the next session to see whether they can develop a better mental health toolkit. I suppose just taking somebody off the programme, they can function if they were given the correct tools. So there's a case of, you know, devising a mental health toolkit that can be implemented within this programme. And I think that'd be better, most beneficial for next programmes that they, that follow on from us." (P15)*
Cultural acceptability and adaptions	*"I think overall it's better than anticipated. I think that there's, there's scope to for it to be developed better and to be delivered in such a way that more alternatives can be put in for, obviously because of different cultural and religious backgrounds, there is a section for those that are on Ramadan. There's also a section for those that are fasting, et cetera like that. So that kind of support on this reintroduction of food is there and it is accessible and it is in our recipe books. And there's also on online programme documents etc. So that's been good because it's it covers everybody from one culture to another and one eating habits to another and one food intake to another." (P15)*

Table 5. Theme four - The need for provider support – quotes

Sub theme	Illustrative quote
Views about the duration of session delivery	*"The sessions was suitable, but it's six weeks of that phase two and I only had sessions with the provider every two weeks. I think it could have benefited from having them once a week because, obviously you know you're reintroducing food some will have more issues than that, but that's why we have WhatsApp group. But I think I personally think it should have been a weekly thing." (P15)*
Access to additional support, such as contact outside of scheduled sessions	*"And when you get the call centre, when you talk to the call centre people, yeah I'd have more luck talking to Santa sometimes I think. Because they are really 'cause they really just read off a script. There's no, there's no real clinical training for them. Whereas a little bit of clinical training, they'd probably be able to deal with half the phone calls that come." (P56)*
	"It all kind of fell apart, in part from, you know, the, the coach wasn't responding, the app wasn't responding. They made out, you know, I kind of felt abandoned and they made out afterwards, a long time afterwards, that it was some technical issue, but it really you know, other people said there were no technical issues and so I think it was just like kind of human gap." (P71)
Attributes of the coach, including skills, person-centeredness and delivery style	*"I mean I will say for [coach] she's not done, she's been the best one out of any of them. And I think she's, she's, I think she's worked her magic with all of us. She's always cheerful. You know you can have a laugh with her…I think she's learned a lot about us through us doing the sessions. She knows whether we've had a bad week or good week by what we've told her with the measurements." (P36)*

of the allocated group session. The one-to-one delivery model was more conducive to answering service user questions and responding to individual need. It was evident that some participants wanted more guidance and support with meal preparation and structured meal plans.

The need for provider support (Table 5)

Service users emphasised that the FR phase required the highest level of support from providers, and some perceived fortnightly sessions to be insufficiently frequent. Many stated that more frequent sessions would have helped them to feel more prepared to reintroduce food and provide more regular touchpoints to ask questions and receive support.

Participants noted that having the same coach delivering the sessions was integral to developing the coach-service user relationship, and sessions tended to be less effective when conducted by a replacement coach. The person-centredness demonstrated by some coaches was welcomed and participants talked about the relationship they had built with their coach. This appeared to be down to the individual coach rather than provider or delivery model.

Across all delivery models, out of session support was highlighted as an area for improvement. Participants talked about a lack of person-centredness, digital Apps not working, inadequate responses to emails or messages from the call centre, and helplines not consistently staffed by individuals with adequate training. This resulted in communication breakdown or delays in responding in a timely manner, resulting in some participants feeling abandoned outside the sessions.

The benefits of physical activity (Table 6)

During FR, service users were encouraged to set physical activity goals as part of their behaviour changes to support ongoing weight and blood glucose management. This was a new element of the programme, as additional physical activity (above routine activities) was not actively encouraged during the TDR phase. During FR some providers required service users to set challenges of steps per day, which was reported back as part of the routine monitoring. Most participants reported a notable increase in the amount and type of exercise they were doing. Many reported incorporating additional physical activity into their routines, ranging from regular family activities, commuting, using home-based gym equipment or taking up exercise on referral gym or swim passes (where available).

The self-reported benefits of increased physical activity included feelings of increased energy, improved mobility, functional fitness and improved mental wellbeing. Several participants noted that weight loss boosted their confidence in taking up new activities such as dance or Zumba. This in turn led to positive experiences in day-to-day life, such as being able

Table 6. Theme five - The benefits of physical activity – quotes

Sub theme	Illustrative quote
Increased exercise and physical activity	*"I am putting a lot of effort into it now. First thing I do in the morning I'll make breakfast for my husband and then I'll go for a walk. And I have a walk. I used to do about 3 to 4000 steps before I started this. Now do up to nearly 10 to 20,000 steps a day." (P35)*
Intentions to undertake more exercise in the future	*"I'm thinking, really thinking of joining £20 a month no contract, access to swimming pool, sauna and beautiful gym. And they do hydro aerobics or aqua aerobics every week so it just sounds right up my street. And I can terminate at any time without having incurring any charges so every Monday I'm going for this programme, rehabilitation programme. So I'm definitely gonna register, become a member next week. I have no, I have never joined a gym in my life, ever. That's a massive change for me." (P57)*
Improvements to day-to-day living/ functioning	*"I didn't take the picture of the steps down to it, you have to go down a massive hill down a boatload of steps to get down to it. Walk across the river and go down a load more steps. It is, it's a killer. It's an amazing place to go but I would never have done that a year ago. I'd have got to the top of that hill and I'd have said to [husband] you go and walk, sod that rot. But I was straight down. (P58)*
	"I just feel so much better in myself… I've always loved swimming, but for me, in the late last few years with being overweight, on holiday I've always got a sun bed near the pool. Why? Because I don't want to have to walk half a mile to the pool where people can see. But I didn't care this time." (P50)

to manage self-care, visiting new places or fulfilling hobbies such as going to football matches. Participants who had not yet increased their activity levels still expressed intention to be more active in the future. Some participants highlighted barriers to increased physical activity such as sedentary jobs, cold weather deterring outdoor activities or a lack of awareness of local opportunities.

Discussion

This is the first paper outlining the experience of service users as they completed the FR phase of the 52-week NHS LCD programme, delivered across broad and diverse populations. The interviews highlighted the practical, social and emotional aspects of FR, including excitement about eating real foods, as well as anxiety around choice and portion control. The control of energy intake and the limited choice experienced during TDR was often found easier to manage than making healthy food choices, a finding also reported in the DiRECT study,[6] although some participants reported feeling newly empowered and mindful regarding eating habits. The interviews also highlighted a need for support with emotional eating behaviours, as identified in the interviews at 12 weeks,[1] and other reports showing high prevalence of emotional eating in participants.[7]

Not all participants had met their weight loss goals by the time of FR and some were therefore seeking additional weight loss, with a proportion continuing to use TDR products or planning to do so to manage weight and offset unhealthy dietary choices. This is consistent with the findings of interviews at the end of the TDR phase of the programme. The DiRECT study, upon which the NHS LCD programme is largely based, permitted those in the intervention group to extend the use of TDR to beyond 12 weeks. Rehackova and colleagues reported that this allowed users to reach their own weight loss goals,[6] increased self-satisfaction and the likelihood of longer-term weight loss maintenance.[8,9]

The availability of person-centred support outside session times was highlighted as a particular area for improvement by some participants. Additionally, participants reported a need for more guidance and support with meal preparation and structured meal plans,[10] as well as a desire for more frequent support sessions during FR. Session content and delivery should be adapted according to health literacy,[11] and should consistently be tailored to cultural needs.[12] The attributes of the coach and their relationship with service users is important in supporting this process.[13] Group sessions impacted on the time and opportunity to develop these relationships, a finding that was also seen in the observations of session delivery.[14] This was also reflected in the new programme specification (now called the NHS Type 2 Diabetes Path to Remission Programme) which provides only one-to-one in-person or digital delivery,[12] thus enhancing the opportunity for person-centred and tailored support.

Physical activity increased during the FR phase, as service users were motivated, more physically able following weight loss, and encouraged to be more active.[15] If maintained, this activity increase has been shown to support longer-term weight loss,[16,17] and to improve physical and psychological health.[17-19] Barriers to participating in physical activity included limited awareness of local opportunities, which has been previously reported and can be further heightened in underserved populations.[20,21] This could be addressed by service providers working more collaboratively with local organisations to enhance awareness of opportunities.[22]

Key messages

- Participants identified a clear need for increased frequency of person-centred support, particularly regarding emotional eating behaviours and support outside of scheduled session times.
- There is a demand for more guidance and support with meal preparation and planning. Tailored and culturally representative education is also essential to address diverse needs effectively.
- The one-to-one delivery model is found to be more effective in addressing service user questions and individual needs. This model highlights the importance of personalised interaction and responsiveness.

Strengths and limitations

This paper presents participant experiences from the FR phase of the NHS LCD programme pilot and highlights areas for service improvements. Representation was strengthened by the addition of reflections from the cross-sectional data. As this paper presents outcomes at 18 weeks into a 52-week programme, the outcomes experienced at this point may not be reflective of outcomes reported at the end of the programme. A limitation of the data reported in this paper was the low number of participants from diverse ethnic groups and as such an understanding of the impact of ethnicity on dietary choices in the FR stage. The experience of 12 South Asian participants from the LCD programme is reported by Dhir *et al.*[12]

Recommendations for policy and practice

1. Commissioners and providers should consider increasing the regularity of the support available during the FR phase.
2. Consideration should be given to strengthening person-centred support available outside session times.
3. Coaches should be further trained regarding cultural competency and appropriately tailored resources and materials should be developed.
4. Providers should avoid assuming health literacy and should tailor content according to need. One-to-one delivery may allow for better coach understanding of service users' individual requirements.
5. Providers should ensure awareness of local physical activity opportunities.

Conclusions

The paper provides unique insights into service user experiences during food reintroduction. It highlights common feelings about departing from the structure and control provided by TDR and having to manage new food choices. It also demonstrates the importance of person-centred support to support long-term behaviour changes.

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‘Life changing or a failure’? Qualitative experiences of service users from the weight maintenance phase of the NHS Low Calorie Diet Programme pilot for type 2 diabetes

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Abstract

Background: The weight maintenance phase of the NHS Low Calorie Diet (LCD) programme focuses on embedding long-term dietary and physical activity changes. Understanding individual experiences of this phase is crucial to exploring long-term effectiveness and equity of the intervention approach.

Methods: This was a coproduced qualitative study underpinned by a realist informed approach, using interviews and photovoice techniques. Service users (n=25) of the NHS LCD programme were recruited from three delivery models, across 21 sites in England. Data were analysed using a thematic approach.

Results: The experiences reported were largely positive, with many participants reporting changes in their diet and physical activity. Some service users expressed a need for additional support and there appeared variation in their experiences of the service providers and the wider available support network. Fear of weight regain and its glycaemic consequences was expressed by many; various mitigations were employed, including participating in other weight loss services and continuing use of Total Diet Replacement products.

Conclusions: The NHS LCD programme has been life-changing for some people. However, service user insights suggest that a stronger person-centred focus might further improve effectiveness and service user experience.

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Key words: type 2 diabetes, obesity, Low Calorie Diet, qualitative, longitudinal, weight maintenance, Re:Mission study

Introduction

This is the third and final paper in a series examining qualitative service user experiences of the NHS Low Calorie Diet (LCD) Programme pilot.[1,2] This paper focuses on experiences reported at the end of the weight maintenance (WM) phase, coinciding with the end of the 52-week programme. An overview of the LCD programme (now known as the NHS Type 2 Diabetes Path to Remission Programme) has previously been reported.[3]

The focus of the WM phase of the LCD programme is to support service users to embed long-term dietary and physical activity changes. This phase promotes an individualised approach whereby service users are supported to maintain their weight loss or to undertake further controlled weight loss if appropriate.

Stated aims of the programme include success in driving weight change, glycaemic improvements and diabetes remission.[4] These will be assessed through quantitative evaluation by NHS England and reported elsewhere. However, understanding service user-led measures of success is important for exploring engagement, motivation and other factors which may drive the measured quantitative outcomes.[5,6] The Re:Mission study was underpinned by a realist informed approach,[7] to help provide research-informed theories to determine how and why outcomes may differ for different people. The ability to understand which aspects of the programme work and which do not work, for whom and why is also critical in ensuring ongoing service improvements and equity. A full summary of the methods used in the study is reported in a simultaneously published paper.[3]

Methods

This paper details the methodological approach taken using the COREQ guidelines,[8] which are described in supplementary file 1 – online at www.bjd-abcd.com.

Participants were recruited to interview on either expressing an interest in the participant survey or responding to an invitation sent via their service provider. Maximum variation sampling was used to gain representation from across different

Table 1. Participant characteristics at 52-week interviews

52-week participant characteristics summary		Number of participants (n=25)
Sex	Male	9 (36%)
	Female	16 (64%)
Age in years	30-34	1 (4%)
	35-39	2 (8%)
	40-44	3 (12%)
	45-49	1 (4%)
	50-54	6 (24%)
	55-59	4 (16%)
	60-65	8 (32%)
Provider	SP1	1 (4%)
	SP2	18 (72%)
	SP3	5 (20%)
	SP4	1 (4%)
	SP5	0 (0%)
Delivery model	Face-to-Face 1:1	0 (0%)
	Remote 1:1	2 (8%)
	Remote Group	20 (80%)
	Digital	3 (12%)
Ethnic group†	White British or White mixed British	21 (84%)
	Asian/Asian British	2 (8%)
	Black/African/Caribbean/Black British	1 (4%)
	Mixed or multiple ethnic group	1 (4%)
	Other ethnic group	0 (0%)
	Prefer not to say	0 (0%)
IMD Quintiles§	1 (most deprived)	10 (40%)
	2	4 (16%)
	3	4 (16%)
	4	2 (8%)
	5 (least deprived)	5 (20%)

† The ethnic group classification as used by the Office for National Statistics in the 2021 Census

§ The Index of Multiple Deprivation (IMD) score is an absolute measure of deprivation that allows for Lower Super Output Areas (LSOAs) in England to be ranked and subsequently classified into five quintile bands. Quintile 1 is the 20% most deprived LSOAs in England, while quintile 5 is the 20% least deprived LSOAs

socio-demographic and service delivery models and providers.[9] This sampling took into account the variation in number of contracts different providers held. Full recruitment methods are reported here.[3] Longitudinal interviews were conducted with a sample of 25 participants (83% of the original cohort recruited and interviewed at 12 weeks, and 92% of those interviewed at 18 weeks). Participant characteristics are summarised in Table 1 and supplementary file 2 – online at www.bjd-abcd.com. Those participants lost to follow-up from the 18-week interviews either withdrew from the study for personal reasons, did not complete the LCD programme, or did not respond to follow-up interview invitations. The experiences of service users who withdrew from the programme are reported elsewhere.[10] Of the 25 participants, 12 shared audio recordings, films or images prior to the interview[3] (see supplementary file 3 – online at www.bjd-abcd.com); many of those who did not share reported lack of time before the interview. Two researchers (KD, CH) conducted the interviews, with six interviews supported by members of the Re:Mission patient and public involvement team (supplementary file 2 – online at www.bjd-abcd.com). Interviews were conducted and recorded online (MS Teams) and lasted between 34 and 75 minutes.

Interviews were transcribed verbatim and analysed thematically by KK.[11] The 52-week interviews were coded deductively and inductively using the 12- and 18-week thematic analysis framework, with additional codes from the 52-week data added to the framework. A sample of transcripts were cross-checked by CH, followed by discussion between KK and CH, to inform the final thematic framework used to undertake final coding. Data were stored and organised using NVivo Software (QS International Play Ltd. Version 12.6).

Ethical approval was received from the Health Research Authority (REF 21/WM/0126) and Leeds Beckett University (REF 107887 and 79441).

Results

Participant demographics were largely representative of the overall LCD pilot population sample, according to interim data presented to the advisory group in summer of 2023. Participant characteristics are presented in Table 1.

Five core themes were derived from the data: 1) personally meaningful outcomes; 2) support for behaviour change; 3) relationships with the coach and provider; 4) support networks, and 5) looking forward.

Personally meaningful outcomes (Table 2)

Participants reflected on their weight and glycaemia levels at 52 weeks, and highlighted a mix of experiences related to these outcomes. Many participants self-reported being in diabetes remission and no longer needing medication as they were discharged from the programme and had maintained weight loss throughout the programme, but some still sought further weight loss. Some participants reported regaining weight above their baseline and a return to elevated glycaemia.

In addition to the measures routinely collected by the service providers, participants shared positive experiences across personal measures of success. They included improvements in psychosocial wellbeing, quality of life and day-to-day physical functioning such as being able to put on their own shoes, playing with grandchildren, walking without breathing difficulties or sitting more comfortably in aeroplane seats. The positive experiences also included changes in physical appearance such as fitting into clothes not worn in years, and not being recognised. Weight loss also resulted in improvements to social relationships, as participants were able to be more active with their family and friends. Positive impacts of the programme on the health of family and friends were also discussed, such as family members adopting healthier eating habits and achieving weight loss.

Support for behaviour change (Table 3)

The sessions delivered during the weight maintenance phase

Table 2. Theme one - Personally meaningful outcomes: quotes

Sub theme	Illustrative quote
Clinical outcomes	*"I believe I'm still in remission. I've been this morning for the blood test, so I'll be getting the latest results, the final results on that next week. In terms of the readings I'm doing, they're, they're still lower than what I started at in terms of the weekly readings I'm doing and I'm, I obviously haven't had any medication now for a year." (P40)*
	"So essentially it, I suppose how do you measure the success of the project? I don't know. But for me it's been a failure. If my goal was to lose weight, then that succeeded, but I put it all back on now and then some, so I'm almost as heavy as I've ever been." (P16)
	"I said when I spoke to you last time, what I'd really like to do is lose more weight and I'm taking a serious look at sort of repeating part of the really serious diet part of it to see if I can lose some more weight. 'Cause I'd really like to lose another 20 kilos, if I'm honest. Because I'm still clearly seriously overweight, even though I lost a massive amount of weight." (P51)
Patient-reported improvements to day-to-day living/functioning	*"I can feel that I breathe better, I sit better, I stand better, my posture is better, I sleep better." (P19)*
Improvements in social relationships	*"But there are going to be a lot more fun memories than, than before you know that now they can remember me climbing on, you know, doing a mad dance in the carpark, you know to Frozen. And chasing ducks. You know it's just they're gonna have different memories than, than the [word missing?] that that was at the beginning of that programme." (P17)*
Changes to physical appearance	*"Getting in, getting in a size 12. Looking in the mirror and getting, that is the biggest bonus, you know, just getting into normal sized clothing. And I think the one, the thing that sticks in my mind more than anything else was the, one of the nurses at the local practice, which I know her really well, and I had to make myself known to her in Asda about six months ago. She didn't recognise me. Oh, it's, you know and I'm thinking, really, you know. And I'm like, yeah. So I get that every time I look in the mirror that, if that isn't a boost to say, 'cause I hated the way I looked, you know." (P50)*
Improved health and/or diet of family / friends	*"I mean me husband were brilliant. He managed to lose a stone just by not having a drink, you know, not drinking in the week or not eating crap. Me not buying crap in for anybody to eat. So he lost a stone at that time as well. You know, the kids were really good." (P58)*
Improvements to mental wellbeing	*"It's life changing, I mean I've said this before, it's absolutely it's life giving and it's like life changing at the same time. And it's empowering." (P17)*

focused on encouraging long-term changes in healthy eating and physical activity behaviours, with some providers providing pedometers and encouraging walking challenges that were reported at each session. Some participants talked positively about the ways in which they were more active, whether alone or with family and friends, and many felt this was associated with maintaining their weight loss. There was also increased awareness of the nutritional value of foods and the proportion of different types of foods that make up a balanced meal. Participants said they were making healthier choices because they had a better understanding of the impact of food and drink on their health. This knowledge helped them to change behaviours relating to cooking and shopping.

For some, there were challenges adopting healthy behaviours due to ongoing emotional eating, with a perception that, despite having improved their nutritional knowledge, the programme had not sufficiently addressed the 'mental side' of eating behaviour, resulting in a resumption of using food to help cope with emotionally challenging personal circumstances.

Relationships with the coach and provider (Table 4)

The behaviours and approach of the coach, and of the provider, appeared to influence the participants' motivation and general impressions of the programme. Coaches were generally considered to be supportive, showing empathy, responding to concerns, and tailoring session delivery to the needs of the group or individual participant. However, some participants shared examples of practice which had impacted them negatively: for example, when the coach named individuals in group sessions who had met their goals, those who had not achieved their goals were left feeling shamed. If they encountered different coaches during their programme journey, participants sometimes noted inconsistency in delivery styles and reported an impact on the development of participant-coach relationships, with some sessions being very 'slide-heavy' and thus limiting time for personalised support.

Making contact with the coach outside the sessions was reported to be difficult by some participants; examples were described of making contact with the provider but not being called back. Experiences with call centre staff were often regarded as unsatisfactory, with queries not being addressed effectively and a lack of person-centredness. One example was repeated contact being instigated by the provider to obtain routine monitoring information (such as weight and glucose levels) following a bereavement.

Support networks (Table 5)

Outside the formal sessions, informal support networks with peers, family and friends and healthcare professionals were reported as important. For participants taking part in group sessions, peer support had developed through WhatsApp groups during earlier stages of the programme. This peer-led support via WhatsApp decreased during the weight maintenance phase. Participants discussed the social support that they wanted and received from family, friends and

Table 3. Theme two - Support for behaviour change: quotes

Sub theme	Illustrative quote
Increased exercise and physical activity	*"We're going to go out for a walk and go and get some fresh air, going through things and it's actually yeah 'cause I've got a teenage son who yeah is attached to every device possible, so getting him out as well. To look at the countryside and just, just do something and see something cool is yeah what we've been doing quite a bit more of." (P21)*
	"The one thing that they did get me into was starting to swim a lot, yeah. And using the local gyms, which I'd never done before. And that was literally linked to the course." (P34)
Improved diet, opting for healthier food choices, and reducing alcohol consumption	*"But what I am aware of is a lot of the nutritional values of things, and I do look at those things now when I go and shop. And I didn't have, I don't think I consciously thought about it before. So I've learned a lot. I've learnt a lot about why foods interact with the body's digestive system the way they do, and sort of how it affects me personally. " (P19)*
	"I don't eat the way I used to eat. It means I don't drink some of the things that I would drink. You know, like if I want a fizzy drink now, I'm going to check if it's sugar free. Whereas before I would just be like I wanna fizzy drink, I'll have a fizzy drink. Yeah, it's, it's changed how I look at foods, changed how I look at my relationship to food. And, you know, whether it's nutritious, whether it's not nutritious." (P43)
	"I've not gone back onto drinking as much alcohol by any stretch. I can't now. I just can't physically do it. And how much you actually eat rather than, you know, rather than just making a load of food and making enough for five people and eating it between two. We don't do that. We have enough for two." (P58)
Changes in routines and behaviours	*"I still batch cook, yeah, so it's a good way for me to portion control as well because if I do a big pot I'll eat a big pot. And that's how I deal with it." (P17)*
	"I don't worry about each individual day. I try to plan my shopping for the week and then I find that works for me. And also I've discovered that I really shouldn't keep lots of extra food in the house 'cause that's just one temptation too much. So I don't. I've gone back to what I did was when I was younger, which is buying stuff in basically as I need it or on a weekly basis." (P51)
Lack of support for emotional or disordered eating	*"I think the programme has failed to address the mental side of why I'm a comfort eater. Why when I'm depressed, when I'm miserable, when I'm sad, when I'm anxious, I run to food. It's not addressed that. Yes, it's educated me on if I stop eating rubbish and do exercise, I'm gonna lose weight. Of course it's educated me, it's educated me about proteins and carbohydrates and all that good stuff. It hasn't helped me mentally." (P18)*
	"There have been some ups and downs. Not because of the initial phase. I mean, I got used to the, you know, restricted calories. I got used to having the shakes and the soups. I got used to eating, to, you know, to being on a liquid diet because my body adjusted, my mind adjusted. But the maintenance phase, there's been some ups and downs. As I said, I've had some personal trauma that I've gone through, which has resulted in binge eating if you like, to deal with the emotional fallout." (P43)
	"I think because I relapsed onto the sugar very quickly and got readdicted to it very quickly, 'cause I think I said before didn't I that I was a sugar addict." (P56)

colleagues, which included receiving compliments about changes to their appearance, motivation for exercise, and reduced pressure to eat unhealthy foods. While the support and encouragement of healthcare professionals was reported by participants to be motivating, it was noted that not all had in-depth knowledge of the programme or participants' progress.

Looking forward (Table 6)

Participants' aspirations for the future varied: some aimed to achieve further weight loss, while others sought to attain or sustain their diabetes remission through maintaining lifestyle changes. Fear of regaining weight and hyperglycaemia was expressed, with the potential for improving health acting as a motivating factor for behaviour changes. Some participants reported exploring further options for managing their weight, with many planning to continue using Total Diet Replacement (TDR) products, having had the experience of four weeks of 'rescue' TDR offered in the event of weight regain (termed by some providers a 'reset').

Discussion

Service users were interviewed longitudinally at three time points along their NHS LCD programme journey. The interviews sought to explore the real-time experiences of service users to help understand how the programme works for different people, what barriers and enablers are along the way, and how future services could be improved. This paper shares the experiences of participants at the end of the WM phase (52 weeks), as they were about to complete or had recently completed the LCD programme.

Improvements in psychosocial outcomes and physical functioning appeared as important as clinical outcomes to participants. Whilst clinical measures are an integral part of monitoring efficacy, patient-reported outcomes and goals are known to be key factors for motivation.[12,13]

The importance of increased levels of physical activity observed in participants at 18 weeks continued into the weight maintenance phase.[2] Here, participants positively associated physical activity with maintenance of weight loss and glycaemic improvements. The benefits to functional fitness, overall health and the wider impact on family members were facilitators to ongoing activity.

Several participants reported continued use of TDR products outside the four-week rescue package provided as part of the programme.[4] This prolonged use was said to help regulate energy intake, support continued weight loss or provide a

Table 4. Theme three - Relationships with the coach and provider: quotes

Sub theme	Illustrative quote
Coach delivery style	*"I didn't understand one of them. One of them just read off the slides and literally that was it. Nobody spoke 'cause it wasn't the same. You could tell she just wanted to get the slides out, slides done and say, yeah, we're finished, off you go" (P36)*
	"The lady we ended up with, it was just, it was just a monologue. There was no interaction. She was slagging it, she was slagging the data, she was slagging the detail on the slides off. It was just, it was shocking really. It was so unprofessional. You know, she brings, brings the slide up that says how many calories should you aim for? Oh, she says, that's a load of rubbish isn't it?" (P40)
	"Yeah, I mean they [coaches] was very good. I can honestly say they was very good on the course. (P9)
Impact of session delivery approaches	*"When eventually we had the last meeting..., it was obvious that everybody who'd stuck the programme, had achieved gold or silver or something, great success was being made. And then eventually, which is really not a good practice, is every name was gone through as to who had got gold or not, and mine wasn't even mentioned, you know. And I just thought I felt that, I thought well I'm the only one not mentioned. I kind of knew I'd put on weight anyway, so I wasn't gonna get any kind of mention or anything, but it kind of, the reason for raising it is it underlines that sense of there's something abnormal about me that others don't understand." (P16)*
Consistency of the coaches	*"If they kept the same person all the way through, it would be good. It, you just question why you get so many and then the next week you get somebody out and then the one comes back and then you get another one." (P36)*
Responsiveness of call centre	*"I just said it was along the lines it was, it wasn't, it was along the lines of I'm struggling at the moment, I'm off work with mental health, and I'd appreciate a call back to discuss. I was struggling because I wasn't eating, so it was along them lines. I wasn't, it was can I have some support? Can someone ring me? And they didn't. They rang me three weeks later and I'd sent two emails and I'd tried to ring several times but just couldn't get through. So that was disappointing." (P7)*
Person-centredness outside of sessions	*"Well I phoned a couple of times. Especially after my, my gran died, with me suffering as I was. And they told me somebody would call me back both times. Nobody did. Then a few weeks later somebody started harassing me every day. Which didn't help matters with the way I was. But obviously when you rang up, you don't get the person you really want to talk to. You get the helpdesk or the call centre. So you don't speak to the one you really want to speak to. So you're just telling somebody that probably doesn't know what you're really on about, and that you may need to talk to somebody else, and then you have to wait for the call. But when they're phoning you more than once a day for seven days, I'm sorry but that's a bit out of question" (P36)*

Table 5. Theme four - Support networks: quotes

Sub theme	Illustrative quote
Peer support during and outside group	*"And then people in the group, they put in their own little bits of information and we all kind of talk to each other on the chat on there." (P48)*
	"I have friends on WhatsApp we make, the people that managed to see the pilot to the end we made a WhatsApp group at the very beginning. And so they would fill me in on the kind of things that I missed and I read them up in the book so I didn't feel that I was kind of getting behind with the information that was being given out." (P66)
Lack of peer support during and outside the group session	*"We had a WhatsApp group going. But when it started unravelling, I didn't feel any support within the group for that. I didn't feel any support either in our.... WhatsApp group and certainly didn't have a sense of I could admit to that in the group. So I very quickly learned a habit of staying silent and just nodding and agreeing rather than sharing how difficult...." (P16)*
Support from family, friends, colleagues	*"My sisters were praising saying that you've done really well. That helped and my son used to ask me, mum, how much have you lost now? And I used to tell him and he used to be really happy for me as well." (P35)*
	"And my girlfriend has been great. And family, when I go up to [area], they also completely understand. I mean they're just relieved that I've lost quite a lot of weight. So no I haven't had any problems with people being supportive." (P51)
Support or contact with healthcare professionals	*"When I got the first blood test results back, the nurse called me personally to congratulate me, which I hadn't expected. And she was so, she didn't, she kind of only vaguely knew about the programme, so she was very interested in what was happening. And then when she said that result, she called and congratulated me and was really pleased and wanted to know more about the programme. But no GP's been in touch with me to talk about it, and I suppose that won't happen until I go now for, you know, a revision for the blood pressure. But I didn't expect them to anyway." (P19)*

method to manage periods of weight regain. The intention to use TDR in this way was also reported in the participant survey and previous clinical trials.[14,15] Whilst TDR product use is considered safe and effective in the short term, further research is needed to explore implications associated with longer-term use.

The relationship with their coach was seen as important by participants and was affected by delivery approaches as well as continuity. The relationship between coach and service user can influence levels of trust and information shared.[16] Suboptimal communication between coaches, other staff within the service provider and healthcare professionals in general practice was highlighted by some participants; improving this may support better service user experience.[17]

The provision of personalised support was regarded as being of major importance. Some participants reported needing support after the end of the programme, and were considering

Table 6. Theme four - Looking forward: quotes

Sub theme	Illustrative quote
To engage in more exercise and stay in remission	*"I think it's maintaining that, just maintaining the non-diabetes status. Cause I didn't, I don't know, I didn't think it would happen so quickly I suppose. I didn't, I didn't really think about it. I knew that at the end of the year I'd be fine, but I didn't think it would happen so quickly. So yeah, that that's good. That's my target." (P19)*
	"I hope to lose a lot more weight and stay healthy. And do a lot of walking." (P35)
Utilising or future intentions to use TDR products	*"I've accepted that's the position I've arrived at, and I'm comfortable with the shakes, and I'm comfortable with rotating them, then I'm happy to live with that, because it's no more expensive in terms of feeding myself. And it's, I can't see any identifiable health problems that could result from doing it. And because it's so easy, especially on a working week, not to worry about, because I live by myself, not to worry about cooking a meal or something like that. Actually, it's quite nice. I get an awful lot more done on the days when I'm using products rather than not." (P51)*
Weight regain, blood glucose levels rising	*"Well there's an obvious concern that you'll relapse, but the longer it goes on and the more I stay within that buffer zone, the more convinced I am that I won't completely relapse and go back to 144k or whatever it was. I, the trick for me is, is the increasing that weight loss and getting down even further so I start to get more to what you might consider to be a healthy weight even at 61." (P51)*
	"I feel a bit frightened. Because I'm shocked at how quick just from, you know, I haven't been eating awful things, I've just not been eating properly. So I think that's clearly my problem and not my weight because my weight I'm not, I'm not heavy, I'm eight stone 12. You know, it's not my weight with me, I think it's, it's obviously something else isn't it. It's my food, my diet, the way I eat that's caused me to have diabetes. So I think slipping into old habits, it scared me how quickly it's gone back on. So I've got no choice because I'm not gonna feel like this, and you know, I don't want a stroke, I don't want to have bad health issues in a couple of years time." (P7)
Seeking future weight management support	*"It might be that Weight Watchers is where I go to maintain whatever weight loss I get. But there's an, there's an online community with it. The language that they use, it's not good or bad. It's very simple." (P56)*
	"I've abandoned the diet completely 'cause I was getting to a point where I was controlling too much the food I was eating and I was eating too little. So I've joined another programme that was towards the end of the [provider]. I've been doing it for about 2-3 months and they have got the opposite approach. So don't check what you eat, don't weigh anything, don't count calories. You have to, you know what's good for you and what's not good for you. It has to become ingrained in you, it has to become your life. So it's a lifestyle change in that sense. So the weight loss has, which was kickstarted by the liquid diets, been great." (P57)
	"I've now asked my GP about bariatric treatment and the fat jab, because I put on the weight that I did lose back on. Because obviously with the setbacks I comfort ate again. Even though I did the reset weeks." (P36)

options such as commercial weight management programmes, bariatric surgery and weight loss drugs. While most participants noted positive experiences, not all found the programme to be successful for them, with some reporting weight regain; this was attributed by some to challenges transitioning from TDR to a healthy diet, managing emotional eating and adopting healthier behaviours.

Strengths and limitations

This paper presents unique participant experiences at the end of their NHS LCD programme journey. The longitudinal design of this study facilitated trust and openness between researchers and participants during the interviews, and produced a greater depth of understanding. Due to participant drop-out, the final sample did not include service users from the face-to-face, one-to-one delivery model, and as such this experience is not reflected within the data presented. This study provides experiences of service users interviewed up to the completion of the programme at 12 months but the longer-term outcomes of the LCD programme remain unknown. A follow-up study conducted a year after completion of the programme would provide clearer insight into the longer-term outcomes of the LCD programme.

Recommendations for policy, practice and research

1. Consideration should be given to routinely monitoring additional outcomes which may be meaningful for service users.
2. Providers should aim to support continuity between participants and coaches to support the development of coach-participant relationships.
3. Support outside the sessions should be strengthened, with emphasis on the provision of person-centred care.
4. Increased communication between provider and primary care is required to improve service users' experience throughout the programme.
5. Providers should aim to address the individual needs of participants, including support or signposting to help with emotional eating. This may be facilitated by one-to-one delivery.
6. Consideration should be given towards the provision of peer support.
7. Commissioners, providers and healthcare professionals should consider providing clearer messaging relating to the ongoing use of TDR products.
8. Further research is required on the support needs of service users following completion of the programme and the physiological and psychological impact of prolonged TDR use.

Conclusion

The NHS LCD programme has been life-changing for some participants. This study provides unique insights to help further understand the enablers and barriers to effective

Key messages

- Reliance on Total Diet Replacement products was evident at twelve months to help regulate energy intake, support continued weight loss, or provide a method to manage periods of weight regain.
- The Low Calorie Diet programme is not deemed successful by all, with some people seeking further commercial or NHS funded weight management support as they complete the programme.
- Improvements in psychosocial outcomes and physical functioning are important. Moving the focus from clinical outcomes to patient reported outcomes may support individual motivation on these types of programmes.

programme delivery and outcomes, and it provides several recommendations for ongoing service improvements and research requirements.

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A qualitative study of the experiences of individuals who did not complete the NHS Low Calorie Diet Programme Pilot

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Abstract

Background: Attrition remains a significant public health challenge as individuals who do not complete programmes are likely to have poorer programme outcomes. On calorie-restricted diets, including the NHS Low Calorie Diet (LCD) Programme pilot, approximately 50% of people are discharged prematurely, and thus do not complete the programme. Reducing attrition therefore has the potential to improve programme efficacy, impact and cost-effectiveness.

Methods: Ten semi-structured interviews were conducted with purposively sampled individuals who did not complete the NHS LCD programme. Interviews explored service user experiences of the programme and experiences of being discharged. Interview data were analysed thematically.

Results: Four core themes were identified: 1) the pre-programme struggles of service users and their route to LCD; 2) a positive and impactful programme; 3) life gets in the way; and 4) a perceived lack of support from the provider. These findings show that individuals had pre-programme struggles and a series of life events that constrained their good intentions, and whilst they were positive about the programme, they were critical of the support they received from providers to deal with their life circumstances.

Conclusions: Policy makers and providers can act proportionately to ensure that programmes, such as the NHS LCD Programme pilot, recognise the circumstances and context of people's lives, and take a more person-centred approach.

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Key words: type 2 diabetes, obesity, Low Calorie Diet, Re:Mission study

Introduction

This paper presents data from a larger study exploring the qualitative experience of service users of the NHS England Low Calorie Diet (LCD) programme (now known as NHS Type 2 Diabetes Path to Remission Programme). A full summary of the programme and methods used in the study is reported elsewhere.[1]

Programme attrition, a process whereby individuals are discharged or withdraw from a programme prior to completion, remains a significant public health challenge as these individuals are likely to have poorer programme outcomes. For example, in weight management interventions, high levels of attrition or low completion rates are associated with fewer health-related benefits, a smaller weight loss and the regain of weight sooner.[2-6] On calorie-restricted diets attrition rates can be as high as 50%,[7] while evidence suggests that the more complex and intense the intervention is, the greater is the rate of attrition.[8,9] Reducing attrition, therefore, has the potential to improve intervention efficacy, impact and cost-effectiveness.[10,11] Thus, there is a need to understand the experiences of individuals who do not complete programmes.[12]

Discharge from the NHS Low Calorie Diet Programme pilot

Of the first 7,554 people referred to the LCD programme, 55% who started the Total Diet Replacement (TDR) phase were still active at 12 months.[13] Thus, 45% of programme starters were discharged before completing the 52-week programme. Six commercial providers, who employed either registered dietitians or nutritionists to deliver the programme, or health coaches with a relevant undergraduate or postgraduate degree (for example, in nutrition, public health, sports exercise, or psychology), were mandated by a service specification to follow discharge procedures. For example, service users could be discharged from the programme if they missed one session and did not contact the provider within a specific time period (which varies by stage of the programme *[TDR weeks 1-4 weekly session (x4), TDR weeks 5-12 biweekly sessions (x4), food reintroduction weeks 13-18 biweekly sessions (x3), and maintenance sessions weeks 19-52 monthly sessions (x8)]*), or if they were unable to comply with the programme

requirements, such as attending a specific number of sessions. Service users could also be discharged if they experienced an adverse or concurrent event of sufficient severity that no longer made it appropriate for them to continue. This paper, therefore, aims to explore the experiences of individuals who did not complete the NHS LCD programme.

Methods

Ten individuals discharged from the NHS LCD programme were recruited for interview, either by provider invitation (x5), through the research team (x3) *[Three individuals completed either 12-week or 12- and 18-week interviews as part of the longitudinal cohort before being discharged]* or by website advertisement (x2). A representation of people discharged was sought in the sample: sampling was purposeful to achieve maximum variation by recruiting participants with differing demographics and programme characteristics (see Table 1 and Table 2).

Ethical approval was received from the Health Research Authority (REF 21/WM/0126) and Leeds Beckett University (REF 107887 and 79441).

Semi-structured interviews (using MS Teams and lasting between 60 and 110 minutes) were carried out by KD between June 2022 and June 2023. An interview guide was designed to elicit discussion of the participants' experiences of the programme, and programme discharge. Interviews were audio recorded, transcribed verbatim, and then read multiple times by KD who conducted a thematic analysis as described by Braun *et al*,[14] which allowed for the identification of themes in the data. Following initial coding, CH read through a sample of transcripts as a second coder to search for alternative meanings in the data not previously tagged. The initial identification, reviewing, defining and naming of themes to consolidate themes into clusters allowed higher-level patterns in the data to be identified. NVivo software (QS International Pty Ltd. Version 12) was used to assist the storing and organising of textual data. Reporting follows COREQ guidelines (see supplementary file 1 – online at www.bjd-abcd.com).[15]

Table 1. Participant demographics

Participant	Age	Gender	Ethnic group †	IMD quintiles §
P1	45-49	Male	White British or white Mixed British	3
P2	50-54	Male	White British or white Mixed British	3
P3	40-44	Female	Prefer not to say	2
P4	40-44	Female	White British or white Mixed British	3
P5	35-39	Female	White British or white Mixed British	3
P6	40-44	Female	White British or white Mixed British	1
P7	55-59	Female	African	2
P8	40-44	Female	White British or white Mixed British	1
P9	40-44	Female	White British or white Mixed British	2
P10	60-65	Male	White British or white Mixed British	5

† The ethnic group classification as used by the Office for National Statistics in the 2021 Census

§ The Index of Multiple Deprivation (IMD) score is an absolute measure of deprivation that allows for Lower Super Output Areas (LSOAs) in England to be ranked and subsequently classified into five quintile bands. Quintile 1 is the 20% most deprived LSOAs in England, while quintile 5 is the 20% least deprived LSOAs.

Table 2. Provider, delivery model and phase and reasons for programme discharge

Participant	Provider	Delivery model	Phase of discharge	A summary of principal reason for programme discharge
P1	SP3	Group	Maintenance	Discharged by provider due to missed sessions
P2	SP2	Group	TDR	Discharged by provider after declaring they felt suicidal
P3	SP6	Group	Pre-programme	Did not start TDR because of perceived lack of product range
P4	SP2	Group	Maintenance	Discharged by provider due to missed sessions
P5	SP2	1-to-1	Food reintroduction	Discharged as unable to comply with the programme/perceived lack of support
P6	SP2	Group	Food reintroduction	Discharged as unable to comply with the programme/perceived lack of support
P7	SP2	Group	TDR	Discharged by provider due to missed sessions
P8	SP1	1-to-1	TDR	Discharged by provider due to missed sessions
P9	SP1	1-to-1	TDR	Discharged as unable to comply with the programme/perceived lack of support
P10	SP4	Digital	TDR	Discharged as unable to comply with the programme/perceived lack of support

Findings

The following section presents the four core themes constructed from the data. Table 2 presents the principal reasons for leaving the programme prematurely; exemplar quotes are presented in Table 3 to Table 6, with further supporting quotations in supplementary file 2 – online at www.bjd-abcd.com.

Theme One - The pre-programme struggles of service users and their route to LCD

Seven interviewees discussed struggling with their mental health pre-programme. Anxiety and depression were reported widely; four were receiving mental health support, three were taking antidepressants, and three discussed having suicidal thoughts. Three interviewees had at least one other mental health diagnosis, such as emotionally unstable personality disorder. Interviewees also noted that their provider was made aware of their mental health struggles before and during the programme.

In the context of having made previous weight loss attempts, interviewees discussed eating the wrong foods whilst also struggling to maintain previous lifestyle changes. Four interviewees also discussed deeper psychological struggles with food, such as eating when they are under stress. Food struggles were also related to physical ill-heath; one interviewee was living with inflammatory bowel disease and had a very limited diet. In total, three interviewees discussed struggling with physical ill-health, including osteoarthritis, inflammatory bowel disease, lymphoedema, lipoedema and rheumatoid arthritis.

In this context, interviewees started the programme because they wanted to improve their health and were conscious of the impact of their weight. Furthermore, the majority approached their GP and asked to be referred to the programme and were subsequently happy to have been given the opportunity to attend.

Theme Two - A positive and impactful programme

Interviewees noted that the programme had a positive impact on them. Six interviewees talked of improved physical health, including improved blood pressure and blood sugars, while one interviewee had put their diabetes into remission. Weight loss, improved levels of physical activity and dietary changes were also reported in a context where interviewees felt supported at home by family. Two interviewees also noted improvements in their mental health.

Interviewees thought the idea of the programme was great and were initially happy with their experience, whilst stating they either wanted to continue with the programme or said they would try it again in the future. Subsequently, the experience of being discharged was framed negatively. Five interviewees perceived that the provider had discharged them against their will, without presenting them with an opportunity to continue.

Table 3. Theme one - The pre-programme struggles of service users and their route to LCD: exemplar quotes

"It's been in the last three years, I'm under [area] mental health team, in the last three years I've had appointments once a year because my psychiatrist has over 900 patients and by the time you get around, a year will lapse" (P1).
"I struggle with like low mood and suicidal thoughts and don't really wanna be alive and I'd rather have, I'd rather if I had a choice of euthanasia, I'd take it" (P3).
"I explained about my anxiety and my depression. I explained everything to them about it" (P9).
"it wasn't really an exercise thing, it was more eating the wrong foods if I'm honest […] And I think that is a large part of the problem is that I wasn't eating healthy and probably eating too much." (P10)
"I went to her [GP] because I said, what do I do about this? I'm struggling with the comfort eating again" (P4).
"I have a weird diet because it, 'cause I'm gluten and lactose free and there's like probably only about 20 foods that I tolerate" (P5).
"I wanted to reverse my diabetes. I was 100% set on doing that and I've done it. But I wanted to once and for all tackle my weight issues and lose it, not just for myself, for my family, for my daughters, I've got grandchildren as well and I wanted to make sure I was gonna be around for a lot, a lot longer period" (P10).
"I actually read it on an article on Facebook a bit before. I mentioned it to my doctor about it and that's how it all started." (P9)

Table 4. Theme two - A positive and impactful programme: exemplar quotes

"Even though they kicked me off, and that limited time of four weeks that I was on there for it's had a big impact on me" (P2).
"my blood pressure became normal. My heart became normal, like resting heart rate was at 60, where my resting heart rate's 120. Blood pressure gone from 180 / 130 to a normal blood pressure. My diabetes, I'd had the blood test done and my diabetes was under 40. My HbC was under 40. So I was classed as put in remission." (P6).
"I would, I would still want to go on a, a programme. It hasn't changed because that was just I was on a journey and I had a blip, my brother's death]" (P7).
"I got low, and I phoned the place up where you phone, the main number. It wasn't that woman that we see on the camera, it wasn't her. And I asked to speak to somebody, and she said why? And I told her why, I felt suicidal. This, they said oh yeah, we'll put you through […] it was the dietitian I spoke to at the end. I said I didn't want to be kicked off. You won't be kicked off, we'll try and get you some help. Blah, blah, blah. Next minute a letter saying you're off" (P2).
"I've devised my own programme now to get to that goal because now I'm more savvy and I've got, I know what to do. OK, so I've got that knowledge and I know what to do and how to do it" (P1).
"I kept to it. I made it quite clear I was gonna keep to it, and I did […] I finished that powder. And then I spoke to the company. […] [the provider said] You're not allowed to buy that stuff. It's dangerous. So, I rang the [product manufacturer] up, they said yes, we can sell you it £50. So since finishing that diet I, I bought a another one and kept it on for my breakfast only. Eat normally in the day but […] milkshake for breakfast that's it" (P2).

Table 5. Theme three - Life gets in the way: exemplar quotes

"I've always been an over overweight person and yo-yo diet, you know, a bit a bit of a yo-yo dieter if you like. And life gets in the way and then you go off that plan and I'm one of these that you know, when I go off it I tend to proper go off It" (P8).
"I've had setbacks over seven months, eight months. I've lost my paternal grandmother and one of my uncles. I've been struggling with my Open University degree due to a torn ligament in my right wrist. So there's been a lot of attention on my Uni work more than anything." (P4).
"If there's anything else that happens because by this time I were worrying about things, I were getting myself into a state mentally. You know what's, what else is going to happen? Is this going to go wrong? Is that going to go wrong? I wasn't sleeping, And I was just really grumpy with my husband and everything because I was just stressing out too much" (P9)
"I also got a lot of kidney stones funnily enough during that period as well, even though I was drinking a lot of liquid. And it's traditional in my family, we all suffer from kidney stones, so I do get them on and off, but I happened to go, got a lot more during the programme" (P10).
"I've got one at the High School, one at the Junior School, one at the Infant School. They've all got, they all do like a million after school clubs and I've, I've got, and there's just always so much going on and rushing around. Also, my mother-in-law had a stroke and we're trying to get her home at the moment. So, I've got a lot of dealing with social services and stuff like that, trying to sort everything out and for them. So, it's just, just life's just busy at the moment" (P5).
"I did explain to her. I said look, I'm not being funny, but I told you I was robbed, we were burgled, had no devices, had to wait to get them replaced, I had no way of contacting you. I explained all this, explained the situation" (P1).
"when I had the news that my brother had passed away, we were in COVID. I had to travel to another country to go and bury him. I wasn't going to leave him in the mortuary […] The light is not constant. So, for me it was that blip" (P7).
"the programme worked for me in that sense. But then when it got to the point of OK, my mental health's now coming into play, what do I do? And I was just told, well, there's nothing, we don't know what you do kind of thing." (P6).
"when I phoned the head office once because I was feeling low. And I've just come out with I felt suicidal and. I just heard nothing from the GP. They said they phoned the GP, but I heard nothing. I just left it. It subsided like it always does. And then I got that letter saying you're off it. We're not having this. You're off" (P2).
*"I did feel quite suicidal. I did feel like complete and utter hopelessness, and I just thought, what's the point? Excuse my language. What's the ******* point?" (P1).*

Despite leaving the programme prematurely, seven interviewees had either continued to use the products without supervision after being discharged or had kept the provider-supplied product to use in the future. For example, one interviewee continued on a full TDR diet for eight weeks after being discharged. Thus, the programme and products were not framed as the defining reasons for withdrawal once people started TDR. However, the perception of poor product choice was the reason why one interviewee choose to withdraw pre-programme.

Theme Three - Life gets in the way

Interviewees reported that life gets in the way of the programme, as setbacks or life events constrain their attempts to attend all sessions or comply with the programme's requirements. The majority of life events were episodes of poor mental health, while two interviewees discussed having suicidal thoughts. One interviewee declared this to the provider and was discharged as a result. Health-related life events, such as kidney stones, a hernia and a stroke in the family were also physical in nature for some interviewees.

Life events were also non-health-related. Being burgled and dealing with the abandonment of a child in the family were mentioned. Three interviewees discussed the death of family members, which for one resulted in burying a family member abroad during COVID-19. Two interviewees discussed moving to a new house or changing jobs during the programme.

Life events, pre-programme struggles and adverse reactions to the TDR products led to a range of daily challenges, such as being in pain due to pre-existing health conditions and having bad stomach cramps because of the products. One interviewee had university work which took precedence over the programme, while others missed sessions due to hospital appointments. This all had an impact on interviewees, who became stressed by the circumstances of their lives and felt like they were unable to focus fully on the programme.

Theme Four - A perceived lack of support from the provider

Six interviewees, with experience of four providers, perceived that there was a lack of provider support. They reported difficulty speaking with anybody outside of scheduled sessions, or getting timely responses to e-mails. However, a lack of support was not just framed as communication issues, as interviewees felt that their struggles and life events were not addressed, which was further exacerbated by difficulty speaking with their coach outside of sessions. Five interviewees also said they perceived there to be no mental health support.

Some interviewees regarded the behaviour of providers as sometimes lacking professionalism and empathy, and verbalised the view that nobody really cares, a point exemplified by their experiences of discharge. Some interviewees learnt about being discharged via a letter, which was seen as dispassionate, while it was perceived that no attempt was really made to understand and accommodate their situation.

Interviewees who completed TDR also noted a lack of support during food reintroduction. Support became infrequent, and interviewees perceived there to be a lack of structure that gave them a clear sense of what they should be eating during this phase, such as a meal plan that provided a bank of meal ideas. As a result, in the perceived absence of meaningful support from their provider, they informed the provider of their intention to stop attending sessions and were subsequently discharged.

Table 6. Theme four - A perceived lack of support from the provider: exemplar quotes

"One basically raised the same issues of lack of support, no understanding and nobody was there to answer the phones or no one's replying to emails, lack of people who care." (P1).
"But obviously when you rang up, you don't get the person you really want to talk to. You get the helpdesk or the call centre. So you don't speak to the one you really want to speak to. So you're just telling somebody that probably doesn't know what you're really on about, and that you may need to talk to somebody else, and then you have to wait for the call" (P4).
"I started to sink into a little bit of a depression, but that wasn't why I left. It was more to do with the facts I didn't know what I was eating. I didn't know. And I felt like I was putting on weight. And it kind of like was, am I eating the wrong things or when I'm asking questions I was getting no answers. They said you can e-mail this thing. When I emailed, I never got an answer. If you rang, I'd ring 3, 4 times. Somebody will get back to you, but no one ever got back to you. And it was just like that's what I meant by lack of support" (P6).
"But when I was then highlighting issues it just seemed to get glossed over by the person who was supposed to be supporting me. And I think it was about a third of the way through they shocked the person supporting me. But every time I sort of raised anything with them, they seemed to just do platitudes more than anything else and say oh well, I'm sure it will come better type of thing" (P10)
"There's no mental health help either so like I suffer with mental health, I suffer with PTSD and emotionally unstable personality disorder. So one of my things is if I go into a manic, I want to eat and there was no help for that part. There was no like, OK, so you've got to remember the majority of people who are diabetic probably have a slight hint of depression. So one of the things we do is eat. So there was no like, OK, so if I get depressed, what do I do?" (P6).
"But it was quite weird because if I'm honest, they were really unprofessional and disjointed the way they were dealing with things. They, they started the app earlier, two weeks prior to my actually commencing the diet so the app was actually out of sync with my diet throughout the entire programme" (P10).
"It's unempathetic, apathetic. You know it just seems unsympathetic. It just seems so dispassionate. It's like well we don't care that you've got to deal with that. This is your problem now. There you go. It's almost like someone giving you P45, cheers, thanks, bye" (P1).
"It was kind of like, here's your food for 12 weeks and then once you start reintroducing it kind of a bit left to your own devices really" (P5)

Discussion

In this paper we have explored the experiences of individuals on the NHS LCD programme who were discharged from the programme prematurely. Our findings show interviewees had often approached their GP about the LCD Programme and were happy to have been referred. Individuals also spoke positively about the programme, in part because of a positive impact on their health and wellbeing, as has been evidenced elsewhere.[6,16] Subsequently, interviewees were often dissatisfied at being discharged, and some continued using TDR products to work towards their goals. These findings suggest that some interviewees had bridged the intention-behaviour gap, and thus had the internal motivation to change.[17]

Our findings also show that interviewees were referred to the programme with a variety of lived experiences that were framed as struggles, upon which the occurrence of life events were layered. Mental health was discussed widely, while literature has reported links between mental health, T2DM and obesity,[18-20] and the increased likelihood of missing sessions when baseline mental health is poorer.[21] Furthermore, health, physical limitations, family issues, significant events and stress are prominent barriers to lifestyle change and reasons for programme withdrawal, as has been previously reported.[5,22,23] These multiple circumstances can be seen as social stressors,[24,25] and were effectively out of the control of individuals, thus constraining their best intentions by drawing their attention and resource away from the programme.

In this context, when seeking support, some interviewees reported not being able to get in touch with their coach, or the provider more generally not meeting their needs. When they did have contact, the social stressors with which interviewees were contending were often not addressed. There is evidence suggesting that out-of-hours provision is linked to reduced attrition,[26] and that intensive support plays an important role in programme adherence.[27,28] Previous research has also shown that transition from TDR to food reintroduction is challenging and needs increased support.[6] Thus, interviewees needed support that was reflective of their life circumstances, not a one size fits all approach. While the frustrations of interviewees were directed towards the provider, many cases of dissatisfaction were the result of the provider applying the discharge procedures mandated in the service specification.

Strengths and limitations

This is the first study to explore the experiences of a small sample of service users discharged from a national LCD programme. We recognise our recruitment may have resulted in a selection process whereby individuals keen to do the programme but who subsequently felt dissatisfied or unfairly treated were more likely to put themselves forward for interview. Furthermore, most of the sample were British in origin, whilst being primarily drawn from the group delivery model. Whilst this is representative of the LCD programme pilot, which was weighted towards group delivery, an insight into more people attending the one-to-one and digital models would be useful in future studies.

The programme providers were commercial organisations so commercially sensitive data such as staffing levels which might have affected programme retention were not available to the authors.

Recommendations for policy and practice

Based on our findings, the following recommendations may help inform commissioners, practitioners and policy makers attempting to improve attrition rates on the NHS LCD (and similar) programmes:

1. To better understand the context of people's lives, providers should account for opportunities to listen to the

social stressors people are dealing with. The 1-to-1 delivery model may better facilitate this process.
2. Coaches should be given time to follow up with service users outside the scheduled sessions. To ensure that out-of-hours support is equitable, coaches should be encouraged to spend more time with those individuals dealing with more social stressors.
3. Consideration should be given to how support for mental health can be better embedded throughout the programme.
4. Providers should deal with people empathetically and ensure compassionate discharge processes.
5. GP practices are required to assess suitability for referral, acknowledging any concurrent physical or psychological issues likely to impact engagement. Improved communication with practices about the programme is recommended to support this process.
6. Service users should be able to take a pause from the programme to allow them to deal with social stressors in their lives without being discharged from the programme. Indeed, this has been incorporated by NHS England in an updated service specification that allows service users dealing with life circumstances to take a planned pause of up to four weeks.

Conclusions

Programme attrition remains a public health challenge, and our findings show that people's life circumstances, regardless of their best intentions, significantly influence their ability to comply. While practitioners may not be able to alleviate all life circumstances, programmes can have degrees of proportionality at both a policy and delivery level. Policy makers can acknowledge the need for certain people to pause the programme, and thus avoid discharging individuals who otherwise want to continue; Providers can also recognise the need to provide more support to people who have more life challenges. Such proportionality is likely to mean a greater emphasis on person-centredness, subsequently ensuring everyone has a fairer opportunity to attain their full health potential without being disadvantaged in any way.[29]

Key messages

- People's life circumstances, regardless of their best intentions, can have a negative impact on their ability to comply with health advice, and thus their chances of completing health-based interventions.
- Programme attrition remains a significant public health challenge, but service providers can contribute to tackling this challenge by providing more support to people who have more challenging life circumstances.
- The proportional provision of support has the potential to make intervention delivery more person-centred, whilst contributing to broader efforts to ensure the NHS Low Calorie Diet programme is more equitable.

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Participant experiences during the NHS Low Calorie Diet Programme pilot. Findings from an online survey

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Abstract

Background: In 2020, NHS England commissioned independent commercial service providers to deliver a Low Calorie Diet Programme pilot, offering Total Diet Replacement alongside behavioural support.

Methods: This paper presents participant experiences of the programme using both quantitative and qualitative data derived from four cross-sectional surveys, and examines differences by sociodemographics, delivery model and provider.

Results: The majority of participants reported a positive experience with the referral process, with a small proportion feeling that insufficient information was provided and that they did not feel respected or listened to by their healthcare professional. Participants' relationship with their coach was generally positive throughout each phase of the programme, and highlights the importance of coach-participant relationships. The relationship with the coach via digital delivery was less favourable compared to other delivery models, as was the perceived adequacy of support provided.

Conclusions: The experience of the referral from general practice and the relationship with the coach are key elements of the participant experience. They demonstrate the importance of, and need for, person-centred care.

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Key words: type 2 diabetes, obesity, Low Calorie Diet, Re:Mission study, survey

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Introduction

The 52-week NHS Low Calorie Diet (LCD) programme consists of 12 weeks of Total Diet Replacement (TDR), followed by 4-6 weeks of phased food reintroduction and ongoing weight maintenance support for the remaining duration; behaviour change support is delivered using one of three models (group, one-to-one and digital).[1] The programme was available to adults aged 18-65 years, with a BMI $\geq$27kg/m^2 (adjusted for ethnicity), and a diagnosis of type 2 diabetes (T2DM) within the previous six years (full eligibility criteria).[1] In addition to the quantitative demonstration of clinical efficacy,[2] a qualitative evaluation was commissioned to explore participant experiences, to inform service development and to provide recommendations relevant to healthcare professionals, service providers, local health economies and commissioners. An overview of the methods used in the qualitative evaluation is reported by Homer *et al*.[3]

Methods

Study design

This study used anonymous online surveys (Qualtrics, Provo, UT), distributed to participants at baseline, end of the TDR phase (12-week survey), end of the food reintroduction phase (18-week survey), and end of the weight maintenance phase (52-week survey). Participants were invited to take part by email (which included a link to the survey and freephone number to complete the survey over the telephone) via their service providers. Service providers were requested to distribute surveys, estimated to take between 20 to 30 minutes to complete, to all service users between September 2021 and April 2023. In cases where access to email was limited, paper copies of the invitation and survey were provided. Participants were requested to complete surveys at all time points. However, due to a low number of completed longitudinal responses the date presented are cross-sectional.

Surveys

Surveys were co-developed with the study Patient and Public Involvement and Engagement group,[4] NHSE, Diabetes UK and service providers, then tested with 12 NHS LCD participants to ensure acceptability. The content of each survey was divided into two parts: (1) experiences of the programme, and (2) lifestyle, physical health and wellbeing (a copy of the surveys

can be found in supplementary file 1 – online at www.bjd-abcd.com). This paper reports findings from the first part of the surveys which explored: the referral process; initial contact and support from service providers; TDR products; perceived positives and negatives of each stage of the programme; and views on possible improvements. Section two of the survey is reported elsewhere.[5]

Analysis

To enable analyses of participant experiences by sociodemographics, delivery model and provider, survey responses were anonymously linked (via a unique referral ID) to data collected by NHS England as part of the services' standard operating practices. Any variations noted based on sociodemographics, delivery model or provider are highlighted in the Findings section; otherwise, no differences were observed. For Likert scale questions, the frequency and distribution of survey responses were calculated using SPSS (version 28). For free text responses, thematic analysis was conducted by KD and DR,[6] using NVivo software (Version 12) for storage and organisation.

Findings

Participants

At baseline 719 participants responded, which fell to 269 at 12 weeks, 167 at 18 weeks and 78 at 52 weeks (note, the number of respondents to individual questions varies because question responses were not mandatory). The sociodemographic characteristics of participants are presented in Table 1 and their distribution by delivery model in Table 2. Sociodemographic characteristics were available for 580 (81%) individuals at baseline, 220 (82%) at 12 weeks, 138 (83%) at 18 weeks and 69 (88%) at 52 weeks. Data linkage was not possible for the remaining participants due to erroneous unique referral IDs. Participant sociodemographics and programme characteristics were representative of the overall LCD programme, according to interim data presented to the advisory group in summer of 2023.

The referral process

Seven hundred and eight participants answered Likert scale response questions related to their contact with their referring healthcare professional (HCP) (Figure 1), the majority of whom (81% to 88%) indicated a positive experience ('strongly agree' or 'agree' responses). Approximately 10% of participants did not agree that their HCP answered all their questions, explained what would happen next in the referral process, or listened to their needs and treated them with respect. Free text responses when asked about possible referral process improvements included 33 participants stating that referral staff needed to better understand the programme and referral process, and to provide more information at the point of referral. Nineteen participants commented that it took a long time to start the programme after referral and 14 participants (nine from the group delivery model) reported a lack of communication during this time.

Table 1. Participant socio-demographics

	Survey			
	Baseline (n=580)	12 weeks (n=220)	18 weeks (n=138)	52 weeks (n=69)
Sex				
Male	39%	43%	44%	54%
Female	61%	57%	56%	46%
Ethnicity				
White	80%	84%	88%	83%
Other ethnic group	20%	16%	12%	17%
IMD quintile[§]				
1	29%	26%	23%	33%
2	22%	19%	19%	10%
3	16%	23%	20%	19%
4	15%	14%	20%	19%
5	17%	19%	18%	19%
Age (years)				
<39	15%	12%	7%	10%
40-49	27%	21%	25%	17%
50-59	39%	40%	44%	39%
60+	19%	28%	24%	33%

[§] The Index of Multiple Deprivation (IMD) score is an absolute measure of deprivation that allows for Lower Super Output Areas (LSOAs) in England to be ranked and subsequently classified into five quintile bands. Quintile 1 is the 20% most deprived LSOAs in England, while quintile 5 is the 20% least deprived LSOAs.

Table 2. Distribution of participants by delivery model

Delivery model	Survey			
	Baseline	12 weeks	18 weeks	52 weeks
Group	405 (56%)	155 (58%)	81 (48%)	34 (44%)
1-2-1	191 (27%)	51 (19%)	45 (27%)	23 (29%)
Digital	123 (17%)	63 (23%)	41 (25%)	21 (27%)

Initial contact and support from service providers

Six hundred and eighty four participants answered Likert scale response questions related to their early contact with their service provider. Overall, 90% 'agreed' or 'strongly agreed' that the people doing their initial assessment were helpful and supportive, and that the process gave them an understanding of what to expect on the programme. Consideration by provider indicated some differences in participant experience: positive ('agreed' or 'strongly agreed') responses were obtained by more than 92% of participants for four providers, 79% by one provider and 47% by another (although it should be noted that 49% of respondents reported 'don't know / not applicable' for this last provider).

Free text responses when asked what to improve in their initial contact with service providers indicated that some participants (n=15) felt the provider needed to provide information earlier to help to manage their expectations, raise awareness of potential side effects, and provide a TDR product start date. Forty participants reported the need for better communication, including clearer and more streamlined

Figure 1. Referral process

information, and the need to be able to contact the provider more easily. The desire to receive a phone call, rather than just app messages or chat, was highlighted by 5 out of 25 participants from one of the digital providers.

Total diet replacement product

Two hundred and sixty four participants rated their TDR products: 63% rated them as 'nice' or 'very nice', 31% as 'okay' and 6% as 'not very nice' or 'horrible'. There were some differences by provider: positive ('nice' or 'very nice') responses ranged from 57% to 87% and only two providers obtained positive responses from more than 65% of their service users. Of the 264 participants, 173 provided additional detail on TDR products improvements (see table 1 in supplementary file 2 – online at www.bjd-abcd.com – for example free text quotes). A desire for more variety in products was most frequently noted (n=70), followed by the need to improve flavour/taste and texture (n=65), with all the different TDR products being referenced. Twenty nine participants felt the products were too sweet or wished that more savoury options were available, and 16 participants wanted more solid food options. Eighteen participants (15 of whom had a particular service provider) also highlighted challenges in obtaining the products advertised on suppliers' websites.

TDR phase

Two hundred and sixty seven participants answered Likert scale response questions about their experiences during the TDR phase (Figure 2). The majority of participants (85% to 88%) indicated that the information provided by the programme was

Figure 2. Participant experience of the total diet replacement phase

clear, the programme was easy to incorporate into their lives and that it helped them to achieve their goals. Furthermore, participants felt supported in the programme (84%) and had a good relationship with their coach (83%). There were consistently positive experiences for the majority of participants across providers and delivery models, with more than 70% of participants responding positively to all questions.

Of the 267 participants, 109 provided information on the positive aspects of TDR, which included: "weight loss" (n=88), "lower blood sugar" (n=48) and other health benefits n=34, including "reduced blood pressure", "feeling fitter", "increases in energy", "more confidence" and "feeling healthier". Some participants also highlighted the ease of TDR (n=16) and not feeling hungry (n=7). Two hundred and fifty two participants indicated they felt positive (e.g. "very pleased", "really happy", "over the moon", "great", "excellent") about their weight change during this phase.

Perceived negatives of the TDR phase were provided by 43 participants and included: inhibiting going out socially (n=23), missing eating real food (n=9), hunger (n=10), the level of determination required to stick to the TDR products alone (n=6) and negative side effects (n=15). One hundred and thirteen participants provided additional detail about possible improvements, which included addressing the TDR product issues described above, with 59 participants focusing their responses on variety, supply, quality and delivery of TDR products. This theme was consistent across providers, with the exception of comments in relation to stock issues being predominantly related to one provider. Increased support was also highlighted as a need by 24 participants (from across a variety of socio-demographics, delivery models and providers), who wanted more support from their coach, and opportunities for peer support (see table 2 in supplementary file 2 – online at www.bjd-abcd.com – for example free text quotes).

Food reintroduction phase

One hundred and fifty five participants answered Likert scale response questions related to the food reintroduction phase (Figure 3). The majority of participants (84% to 89%) indicated that the information provided by the programme was clear, the programme was easy to incorporate into their lives and that it helped them achieve their goals. Furthermore, they felt supported in the programme and had a good relationship with their coach. While there were generally consistently positive responses across providers and delivery models, there were two areas of difference: participants' perceptions of the clarity of information from one provider, which only obtained 66% positive feedback, and the participant–coach relationship for the digital delivery model, which only obtained 67% positive feedback in comparison to 90% and 87% positive feedback for the 1-2-1 and group delivery models, respectively.

Of the 165 participants, 125 provided information on positive aspects of food reintroduction (see table 3 in supplementary file 2 – online at www.bjd-abcd.com – for example free text quotes). Being able to eat 'real' food was most frequently noted (n=39), followed by consumption of / appreciation for healthy food (n=35) and feeling more in control / being more mindful of the food being consumed (n=34). Social eating (n=19), changes in weight (n=12) and the reduction in negative side effects (n=5) were also highlighted. There were no noticeable differences in participants' positive experiences by sociodemographics, delivery model or provider.

Perceived negatives of this phase were provided by 60 participants and included: a need to plan, purchase and prepare food (n=23); increases in weight / anxiety about weight regain (n=19); concern about the level of motivation required to stick to the programme (n=9); anxiety over what food to eat (n=7); and the amount of support / guidance provided (n=6). When asked if they were confident about the types of food to

Figure 3. Participant experience of the food reintroduction phase

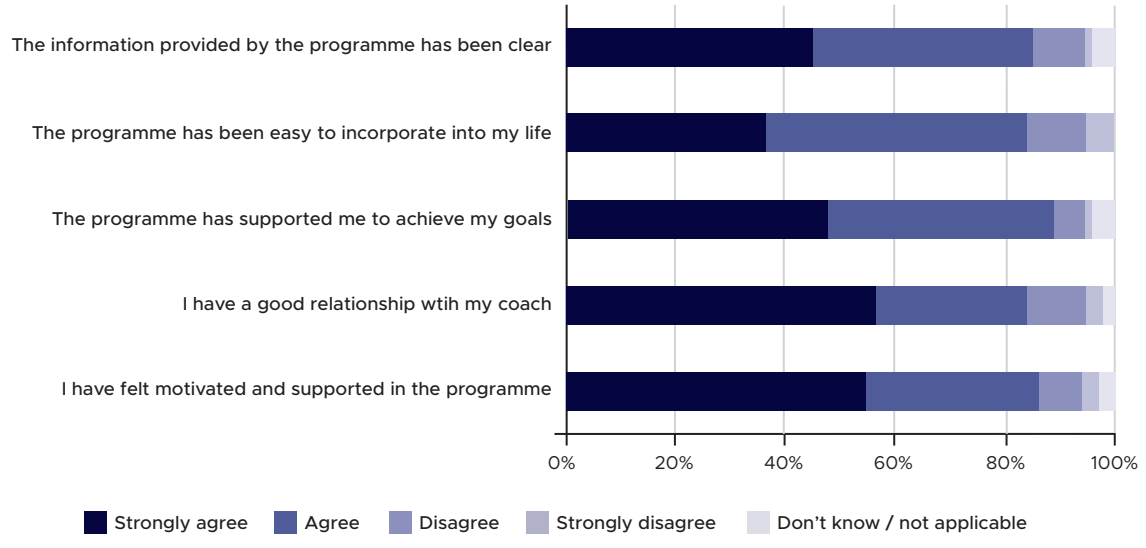
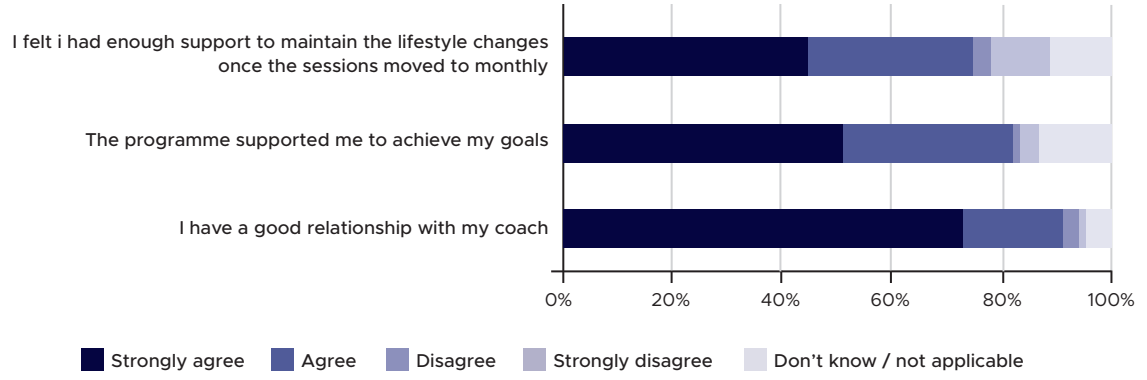


Figure 4. Participant experience of the weight maintenance phase



reintroduce into their diet, 63 participants (43% of respondents) indicated 'to some extent' and eight participants (5% or respondents) indicated 'no'. This varied by delivery model, with 'to some extent' being chosen by 60% of participants on the digital model, compared to 36% and 45% for those on the 1-2-1 and group models, respectively.

Participants were also asked how they felt about any weight change during the food reintroduction phase. In general, participants who continued to lose weight expressed positive emotions while those not doing so described mixed feelings.

Thirty nine participants provided additional detail on how they felt the food reintroduction phase could be improved. Fifteen would have liked additional meal planning resources, 13 needed more support from the service provider, and 13 suggested a slower transition from TDR products. When asked about the pace of food reintroduction, 29 (19% of respondents) indicated they felt it was 'too fast', 120 (76% of respondents) felt it was 'about right', and eight (5% of respondents) felt it was 'too slow'; this finding was consistent across providers and by participant sociodemographics.

Weight maintenance phase

Seventy three participants answered Likert scale response questions related to the weight maintenance phase (Figure 4). The majority of participants (75% to 90%) felt that they had enough support to maintain lifestyle changes, the programme supported them to achieve their goals, and that they had a good relationship with their coach. There was variability by provider (there were sufficient responders for four providers) and delivery model in participants' perception of the adequacy of support, with positive feedback from 60%, 63%, 84% and 87% of responders from each provider, and positive feedback from 67%, 80% and 82% for the digital, 1-2-1 and group models, respectively.

Twenty participants provided additional detail on how the maintenance phase could be improved: 15 stated they would have liked additional support / contact with their service provider, three would have liked more resources to support meal preparation, and two noted the need for more education.

Fifty seven participants provided information on how they felt about any weight change during the weight maintenance phase (see table 4 in supplementary file 2 – online at www.bjd-abcd.com – for example free text quotes). Forty participants were happy with their weight change, 13 were disappointed and four indicated they were okay.

Seventy four participants answered the question about continued use of TDR products during the weight maintenance phase; of these, 23 (31%) indicated they had consumed further TDR products provided by their service provider (likely as part of a rescue package offered for weight regain), whilst 14 (19%) indicated they had purchased the products themselves.

Discussion

This is the first paper to explore the experiences of a large, diverse sample of service users participating in the NHS LCD pilot programme in England. The journey begins with a HCP referral, which was regarded positively in most cases. This finding is supported by other components of the wider programme evaluation,[7] which found that most HCPs found the referral process to be easy and straightforward, though some considered themselves to have insufficient expertise and knowledge.[8-10] This variation may be explained by the different approaches taken in each area to mobilising the programme, including training, incentivisation and the management of referrals.[11] Around 1 in 10 participants did not feel that the referring HCP had listened to their needs or treated them with respect. The detailed reasons for this are unclear and would benefit from further research: it is possible that, in some cases, this could relate to the expression of weight bias, which has been shown in previous studies and carries a risk of healthcare avoidance.[12-15]

The majority of participants felt supported on the programme, though a small proportion reported needing additional support from their coaches across its duration. Interviews with participants have previously highlighted a need among some for strengthened support outside the sessions and increased support frequency.[16,17] Survey responses showed differences by delivery model, with participants on the digital

model highlighting a desire to receive phone calls rather than in-App messages, and digital service providers receiving less favourable responses to questions about the adequacy of support provided and the participant coach relationship. This is important given the growth in digital weight management services.[18]

A desire for peer support was also reported by some participants, which aligned with findings from participant interviews at 12 weeks (end of the TDR phase).[19] The importance of peer support was highlighted in a recent meta-analysis which demonstrated greater post-intervention weight loss and lower BMI in individuals who received peer support compared to usual care.[20] Ufholz also demonstrated the positive participant perception of peer support, which may be particularly effective in supporting vulnerable at-risk populations and may improve long-term adherence.[21]

The food reintroduction phase of the programme was accompanied by several positive experiences related to returning to 'normal' eating patterns, including being able to eat 'real' food and eat socially again. Participant interviews also reported the enjoyment of eating out socially again, but highlighted potential challenges in finding healthy options in restaurants.[16] However, some participants also reported feeling more equipped to follow a healthy diet, with an increased appreciation of healthy food, and feeling more in control of their consumption. Similarly, interview participants also spoke about a heightened appreciation of taste, although the feeling of control was not consistent, with some interview participants reporting anxiety about returning to unhealthy eating habits.[16] This was evidenced by a notable proportion of survey participants who were not completely confident in the types of food they should be reintroducing, with the least confidence observed in participants taking part in the digital delivery model.

Responses to the 52-week survey were smaller in number but do offer important insights into the continued use of TDR products. As part of the service specification, providers offer a 'rescue' package, permitted once during the weight maintenance phase, to provide participants with four additional weeks of TDR products, if they have gained more than 2kg. Findings from the survey indicated that 31% of participants took this rescue package, with an additional 19% consuming further TDR products not provided by their service provider. These findings are consistent with those from participants interviewed at the end of the food reintroduction and weight maintenance phase, when approximately one in three were either actively using TDR products or expressed an intention to continue doing so in order to manage their weight and offset unhealthy dietary choices.[16,17]

Strengths and limitations

This study is the first to examine the experiences of a significant number of service users who participated in the NHS LCD programme. The study's strengths include its representativeness of the delivery models and socio-demographics of the main programme, as well as the large number of participants at baseline. The study encountered several limitations that need to be acknowledged. First, there was a poor longitudinal update. Additionally, the lack of information on the proportion of programme participants invited to provide feedback meant it was not possible to calculate uptake rates for the surveys. Other limitations stemmed from the reliance on service providers to distribute the survey (although they had a contractual obligation to support the evaluation) and reliance on participants to report ID numbers accurately – hindering data linkage for participant socio-demographics. Further, the study may have been subject to selection bias, whereby those with negative views or those who had withdrawn from the programme were less likely to participate in the survey. Lastly, it should be recognised that participants may have found the surveys burdensome and repetitive, possibly contributing to the reduction in responses at each stage.

Key messages

- The majority of participants indicated that the information provided by the programme was clear, the programme was easy to incorporate into their lives and that it helped them to achieve their goals.
- Findings highlighted the importance of the coach-participant relationship; with support provided by the digital delivery model perceived less favourable.
- Participants indicated a need to improve the variety, flavour/taste and texture of Total Diet Replacement products.
- During the maintenance phase, 19% of participants consumed Total Diet Replacement products not provided by their service provider.

Recommendations for policy and practice

- Increase opportunities and identity the most suitable approaches for training that enable HCPs to obtain sufficient knowledge of the programme and referral process.
- Providers should offer and facilitate opportunities for peer support.
- Digital delivery models should offer phone calls in additional to App-based support.
- Providers should offer a variety of TDR products, both in terms of type and flavours.
- Commissioners and providers should consider increasing support with food reintroduction.

Recommendations for future research

- Assess the long-term experiences of the now nationally available NHS T2D Path to Remission Programme.
- Investigate completion incentivisation to address issues with survey uptake.
- Explore alternative methods for accessing participants in order to reduce reliance on commercial service providers as gatekeepers.
- Examine the impact of the programme adaptations outlined

above (e.g. offer and facilitate opportunities for peer support) on participants' experiences and outcomes.

Conclusion

This survey offers insights into the participant experience of the NHS LCD programme and gives recommendations for improvement to the service for commissioners, providers and referrers, many of which have already informed the development of the NHS programme.[22]

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