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# Research: Educational and Psychological Aspects

# A brief self-compassion intervention for adolescents with type 1 diabetes and disordered eating: a feasibility study

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## Abstract

**Aim** To examine the feasibility and acceptability of a brief self-compassion intervention for adolescents with type 1 diabetes and disordered eating behaviour.

**Methods** Twenty-seven adolescents with type 1 diabetes were recruited and randomized to receive the brief (two 2.5-h sessions) self-compassion intervention, either in the intervention group ($n$=11) or in a waitlist control group ($n$=8). The intervention was adapted from the standardized eight-session 'Making Friends with Yourself' programme, and sessions were delivered 1 week apart. Acceptability was assessed through qualitative questionnaires and feasibility was assessed based on session attendance and recruitment metrics. Possible changes to disordered eating behaviour, self-care behaviours, diabetes-related distress, self-compassion, stress and glycaemic control were also assessed.

**Results** Nineteen participants completed the study, and they reported an increased sense of common humanity (acknowledging that we are not alone), mindfulness, and coping resources. In terms of feasibility, recruitment took longer than expected (8 months) and not all participants were able to attend both sessions (nine could only attend one of the two sessions).

**Conclusions** While self-compassion is a strong conceptual fit for the issues of type 1 diabetes and disordered eating behaviour in adolescence, and the intervention content appears acceptable, feasibility issues were such that brief self-compassion programmes will probably need to be adapted into digital interventions for future research. (Trial registration number: ANZCTR 12619000541101).

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## Introduction

Disordered eating behaviour in adolescents with type 1 diabetes presents a significant issue in diabetes care. Approximately 50% of female and 18% of male adolescents with type 1 diabetes report significant levels of disordered eating behaviours, such as insulin omission or misuse for weight loss, other forms of purging, binging, and diet restriction [1]. Disordered eating behaviours are associated with higher instances of serious diabetes-related complications, including diabetic ketoacidosis and microvascular complications [2]. However, despite the problems posed by disordered eating, 'clinically usable' intervention approaches are limited in this population [3], with only one randomized controlled trial addressing this issue on record [4].

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Self-compassion offers a promising approach. Self-compassion, the ability to respond to the self during times of difficulty with kindness and understanding, appears highly relevant to the feelings of self-blame, failure and body-image anxieties that are frequently comorbid with the complex self-management needs of type 1 diabetes [5]. In contrast to the self-criticism that is common in people with type 1 diabetes, self-compassion offers an alternative way of relating to oneself when faced with difficult experiences through three components: having a balanced awareness of thoughts and feelings (mindfulness); acknowledging that we are not alone in our suffering (common humanity); and being caring and understanding towards oneself, especially in times of difficulty or failure (self-kindness) [6].

In addition to its strong conceptual fit, research in adult and adolescent populations has linked self-compassion with better mental and physical health outcomes. A recent meta-analysis

**What's new?**

- The study is the first to perform a preliminary evaluation of a clinically usable, brief self-compassion intervention for adolescents with type 1 diabetes and disordered eating behaviour.
- Self-compassion appears acceptable and of good conceptual fit for the difficult emotions and stressors faced by this population.
- Qualitative data suggest the brief self-compassion intervention may be effective by increasing coping, perceptions of common (shared) humanity, and mindfulness.
- Despite the programme's acceptability, delivering the brief self-compassion programme face to face was of limited feasibility, therefore, future research will probably need to explore digital adaptions.

demonstrated a large effect size for the inverse relationship between self-compassion and psychological distress for adolescents aged 10 to 19 years [7]. More broadly, in people with chronic illness, self-compassion has been shown to be associated with better adjustment in HIV [8], cancer [9], epilepsy [10], inflammatory bowel disease, arthritis [11] and diabetes [12].

Although self-compassion interventions have not yet been trialed in adolescents with diabetes (or any other chronic illnesses), standardized 8-week self-compassion programmes have shown improvements in mental health and well-being for healthy adolescents [13,14], as well as improved mental health and glycaemic control in adults with type 1 and 2 diabetes [15]. However, 8-week face-to-face programmes are logistically and psychologically demanding and may be difficult to implement in the context of standard care for adolescents with diabetes.

In contributing to work in this area, we developed a brief (two-session) self-compassion intervention adapted from the 8-week standardized self-compassion programme for adolescents, 'Making Friends with Yourself' [14]. The present feasibility study examines the acceptability and feasibility of a 'clinically usable' brief self-compassion intervention for adolescents with type 1 diabetes and disordered eating behaviour. We hypothesized that the intervention would (1) prove acceptable and feasible for adolescents with type 1 diabetes and disordered eating behaviour and (2) indicate possible improvements to disordered eating behaviour, diabetes-related distress, stress, self-care behaviours, and glycaemic control.

## Participants and methods

### Design overview

The study was a feasibility study of a brief self-compassion intervention (treatment group) compared with a waitlist control group, in 27 adolescents with type 1 diabetes.

Recruitment started on 24 May 2019 and was completed on 1 November 2019. Session groups were completed on 23 November and data collection was completed on 9 March 2020.

### Participants and randomization

Participants were recruited from three paediatric and adolescent diabetes clinics in Auckland, New Zealand by the first author (A.B.). Participants were eligible if they were aged between 12 and 16 years, had a diagnosis of type 1 diabetes for more than 6 months at time of recruitment, and demonstrated a moderate to high instance of disordered eating behaviour as assessed by the Diabetes Eating Problem Survey Revised (DEPS-R) screening tool [16]. Exclusion criteria included being non-English speaking, diagnosis of serious developmental or psychiatric disorders, untreated hypothyroidism or severe hypoglycaemia, or hospitalization with diabetic ketoacidosis in the previous 48 hours. Sequentially numbered, sealed envelopes were used for randomization, computer-generated by a biostatistician independent of intervention delivery. Figure 1 provides an overview of the flow of participants throughout the study.

### Intervention

The brief self-compassion intervention involved two sessions (2.5 h each in duration) delivered 1 week apart. The sessions included group exercises and discussions, art activities, meditations, and individual reflection exercises exploring the three components of self-compassion and self-compassion coping tools to use in everyday life when experiencing difficult emotions. The intervention sessions were facilitated by the first author (A.B.), a trained Making Friends with Yourself teacher, and were supervised by K.S., a registered psychologist. More details regarding the development and content of the intervention have been published previously in a protocol paper [17].

### Outcome measures

#### *Feasibility and acceptability*

The primary outcomes of the study involved assessments of the feasibility and acceptability of the brief self-compassion intervention with a view to designing a larger, multicentre, fully-powered study. Feasibility was assessed by evaluating the length of recruitment and uptake, reasons for not wanting to participate, and session attendance/drop-out rates. To determine acceptability, participants were also asked open-ended qualitative questions with regard to the strengths of the programme, their favourite exercises, suggestions for future improvements, and whether they used the tools outside of sessions and/or whether they would recommend the programme to other adolescents with type 1 diabetes. Answers were analysed independently by two of the

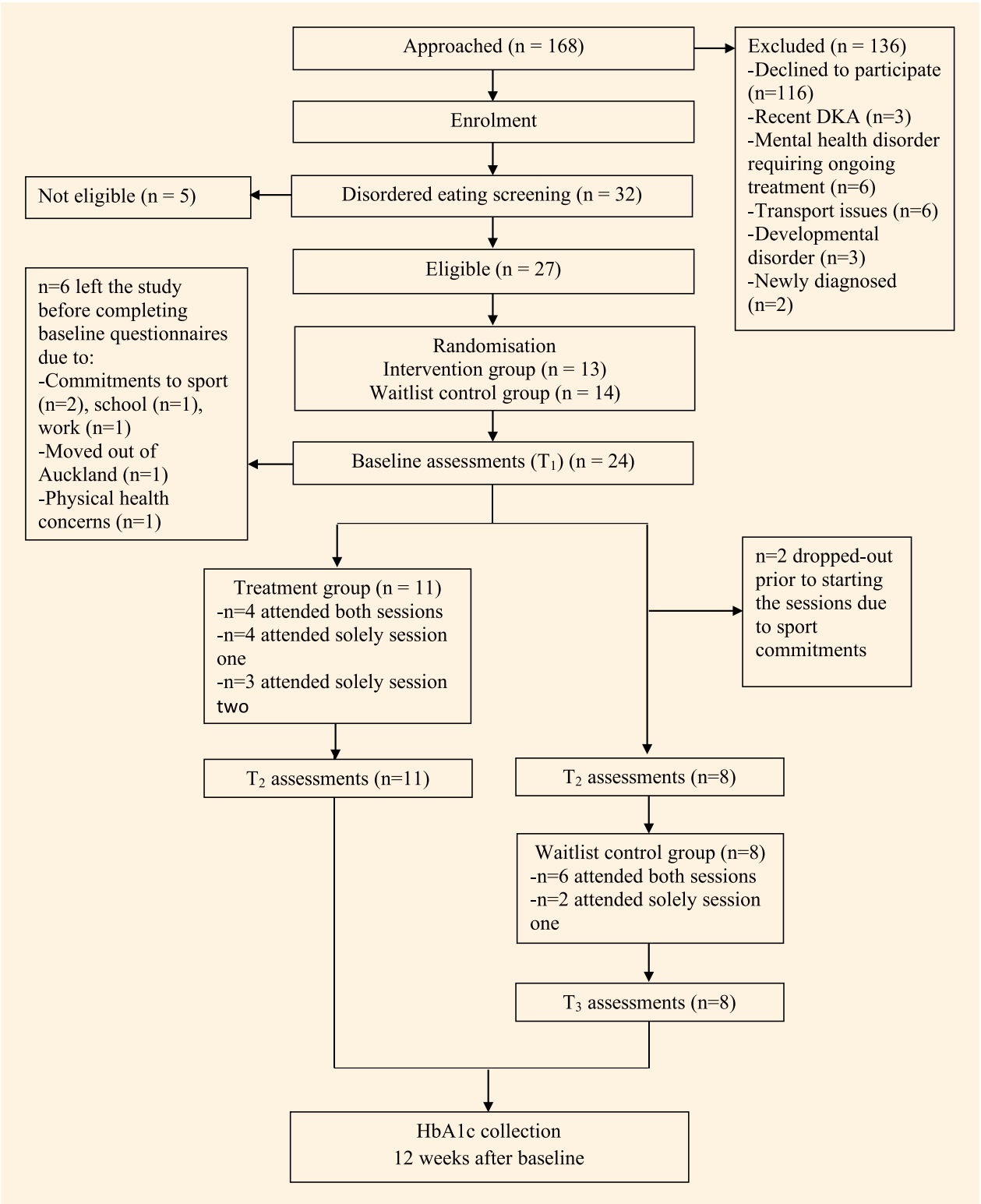


FIGURE 1 Flow of participants through the study. DKA, diabetic ketoacidosis. $T_1$, time point 1; $T_2$, time point 2; $T_3$, time point 3.

authors (A.B. and K.S.) using directed content analysis, a systematic approach for exploring and categorizing qualitative data, guided by existing research questions, categories or theories [18]. Using this approach, data were organized into themes and sub-themes and coded independently. The authors then met to agree on final themes before conducting

 

coding independently again. The coders differed on only one participant response, and this difference was resolved.

*Quantitative measures*

As shown in Fig. 1, participants also completed standardized measures at baseline, time point 2 (post-intervention for the intervention group and pre-intervention for the waitlist control group) and time point 3 (post-intervention for the waitlist control group). These measures included: the DEPS-R (measuring disordered eating behaviour) [16]; the Self Care Inventory-Revised Version (measuring adherence to diabetes-related self-care behaviours) [19]; the Problem Areas in Diabetes survey (measuring diabetes-related distress) [20]; the Self-Compassion Scale, short-form (measuring self-compassion) [21]; and the Perceived Stress Scale (measuring stress) [22]. Glycaemic control information ($HbA_{1c}$, mmol/mol) was collected as part of routine care at baseline and was also collected at the participants' subsequent clinic visit after completing the intervention. Sex, age, ethnicity, insulin regimen and duration of diagnosis were collected at baseline.

### Ethics

Ethical approval was granted by the New Zealand Health and Disability Ethics Committee (A+8467) and all participants provided informed consent/assent. CONSORT guidelines were followed and the trial was prospectively registered with the Australian New Zealand Clinical Trials Registry (ANZCTR 12619000541101).

## Results

### Feasibility

During recruitment 168 adolescents were approached, of whom 32 consented and completed the disordered eating behaviour screening tool (19% uptake). Of the 27 eligible adolescents, six withdrew before completing baseline questionnaires and two withdrew after completing the baseline measures (30% drop-out rate). Figure 1 shows the reported reasons for drop-out. In addition to the reasons reported in Fig. 1, clinical staff in the diabetes team mentioned that the focus on screening disordered eating behaviour and the surrounding stigma [23] may also have been a deterrent to participation. It took 8 months to recruit 27 of our initial 28 participant target. Of the 19 who attended the programme, nine attended either only the first ($n$=6) or second ($n$=3) sessions because of conflicting sport or study commitments. Ten were able to attend both sessions. Participant characteristics are shown in Table 1, stratified by group.

### Acceptability

The qualitative data suggest that the brief self-compassion intervention was acceptable to adolescents with type 1 diabetes and disordered eating behaviour. All (100%) of those who attended either one or both sessions ($n$=19) said they would recommend the programme to other adolescents with type 1 diabetes. Participants were engaged with session content, with most participants who attended both sessions (eight of 10) reporting having used the tools between sessions. Several themes were identified relating to positive experiences in the programme including increased coping resources, increased sense of common humanity, and increased mindfulness. Themes relating to suggestions for improvement were also identified, including more interactive/practical activities, improved social aspects, and changes to location and duration (Table 2).

### Positive experiences

*Increased coping resources*

Sixty-eight percent of participants (13 of 19) reported an increase in coping resources. Participants mentioned the effectiveness of tools taught, for example, 'the here and now stones [were my favourite activity] because they were great to use in everyday life and fun and very effective for me' (girl, aged 13) and 'I liked that we had different activities to do to calm us down and made us feel less stressed about school and sports' (girl, aged 12). Participants also reported enjoying learning new coping tools to handle general stress and anxiety, 'I liked seeing ways you can handle stress and anxiety' (girl, aged 14).

*Increased sense of common humanity and shared experiences*

Participants also reported value in understanding that they were not alone in experiencing difficult feelings (common humanity). For example, 'I most enjoyed the people in it because I now know I'm not alone' (girl, aged 13) and, 'It showed people are all in the same boat' (boy, aged 13). In addition, six participants selected a common humanity exercise as their favourite activity in the programme. The value of sharing feelings and experiences [e.g. 'my favourite part of the programme was getting to share opinions' (girl, aged 13)] was also mentioned by three of nine participants who gave responses indicating this theme.

*Increased mindfulness*

Seven participants referenced increases in mindfulness and enjoying mindfulness activities, for example, 'I most enjoyed knowing more about mindfulness' (boy, aged 12) and 'I enjoyed mindful drawing as it made me think creatively and it made me forget about everything and made me focus on the drawing and enjoy it' (boy, aged 16).

### Suggestions for improvement

*More interactive/practical activities*

Eleven of the 19 participants (58%) gave suggestions for more interactive or practical activities, such as including

**Table 1** Baseline characteristics of the sample

| Demographic | Intervention group ($n$ = 11) | Waitlist control group ($n$ = 8) | Drop-outs ($n$=8) | Total ($n$ = 27) |
|---|---|---|---|---|
| Age, years | 14.0 (1.2) | 13.6 (1.3) | 14.1 (1.6) | 13.9 (1.3) |
| Sex, $n$ (%) | | | | |
| Male | 4 (36) | 5 (63) | 2 (25) | 11 (40) |
| Female | 7 (64) | 3 (38) | 6 (75) | 16 (60) |
| Ethnicity, $n$ (%) | | | | |
| NZ European | 6 (55) | 6 (75) | 4 (50) | 16 (59) |
| Samoan | 2 (18) | 0 (0) | 2 (25) | 4 (15) |
| Māori | 1 (9.1) | 0 (0) | 1 (13) | 2 (7.4) |
| Indian | 1 (9.1) | 1 (13) | 0 (0) | 2 (7.4) |
| Other | 1 (9.1) | 1 (13) | 1 (13) | 3 (11) |
| Type of insulin treatment, $n$ (%) | | | | |
| Pump | 7 (64) | 4 (50) | 4 (50) | 15 (56) |
| Injections | 4 (36) | 4 (50) | 4 (50) | 12 (44) |
| Time since diagnosis, years | 8.7 (3.7) | 5.8 (4.0) | 6.0 (4.9) | 7.0 (4.2) |
| Disordered eating behaviour score | 26.3 (17) | 13.8 (6.0) | 18.6 (8.6) | 21.5 (12.4) |

NZ, New Zealand.
Data are presented as mean (SD), unless otherwise indicated.

**Table 2** Summary of key qualitative themes and prevalence

| Qualitative research questions | Key themes | Prevalence |
|---|---|---|
| What did participants like about the programme? | 1. Increased coping resources | 13 of 19 participants (in 15 responses) |
| | 2. Increased common humanity and shared experiences | 9 of 19 participants (in 16 responses) |
| | 3. Increased mindfulness | 7 of 19 participants (in 8 responses) |
| How would participants improve the programme? | 1. More interactive/ practical activities | 11 of 19 participants (in 18 responses) |
| | 2. Improved social aspects | 5 of 19 participants (in 8 responses) |
| | 3. Changes to location and duration | 7 of 19 participants (in 11 responses) |

more practical activities, playing music in the background, or fewer writing activities. For example, 'I would have liked to get up more and be active and maybe do a couple more practical activities' (girl, aged 14).

*Improved social aspects*

Five participants suggested changes to improve the social environment of the group, such as having separate groups for those under/over 14 years and having more time at the start of the session to get to know other participants; for example, 'make the groups similar ages so that they can relate better and have a greater experience' (boy, aged 16).

*Changes to location and duration*

Participants suggested changes to the location and to the duration of the sessions by both making the sessions longer ($n$=2) and shorter ($n$=4). Three participants lived at least 40 minutes outside of central Auckland and noted that this was an issue for them, for example, 'I didn't dislike anything major just that the sessions took place very far away for me, around 45 minutes away' (boy, aged 15).

### Quantitative results

As the study was designed to determine the feasibility and acceptability of the brief self-compassion programme and hence was underpowered, no statistical tests are reported. Mean changes were relatively small across all outcomes, ranging from 1.2% to 4.8%. Table 3 shows the means and standard deviations for the outcome measures before and after the intervention as well as the mean changes. It is also worth noting that, although outcome measures seemed suitable for the sample, they may have lacked sensitivity to measure changes over the short (2-week) measurement time frame.

## Discussion

The present study is the first to assess the acceptability of using self-compassion as a therapeutic approach for adolescents with type 1 diabetes and disordered eating behaviour and to evaluate whether a brief two-session programme would be feasible in diabetes care. Qualitative data generally indicated high acceptability, with themes of increased common/shared humanity, coping resources, and mindfulness predominating, although there were suggestions for

**Table 3** Means, ranges and standard deviations for quantitative outcomes before (time point 1 for intervention group; time point 2 for waitlist control) and after the intervention (time point 2 for intervention group; time point 3 for waitlist control)

| Outcome measure | Pre-intervention Mean (SD), range | Post-intervention Mean (SD), range | Mean change Mean (SD), % |
|---|---|---|---|
| Disordered eating behaviour* | 21.0 (14.7), 7.0–56.0 | 21.3 (14.7), 5.0–59.0 | 0.3 (5.8), 1.2 |
| Diabetes distress* | 46.5 (17.1), 26.3–77.5 | 48.5 (18.4), 23.75–77.5 | 2.0 (7.9), 4.4 |
| Stress* | 17.8 (9.8), 2.8–34.0 | 18.7 (9.4), 2.0–40.0 | 0.9 (6.1), 4.8 |
| Self-care behaviours† | 68.5 (11.2), 47.5–88.8 | 70.0 (9.8), 42.5–83.8 | 1.5 (8.4), 2.2 |
| Self-compassion† | 3.0 (0.8), 1.2–4.2 | 3.1 (0.9), 1.1–4.7 | 0.1 (0.5), 1.7 |
| Glycaemic control* | | | |
| mmol/mol | 65 (12.0) | 62 (10.1) | –2.5 (10.6), –3.9 |
| % | 8.1 | 7.9 | |

*Higher scores are less favourable/ indicate higher symptomatology.
†Higher scores are favourable.

improvement. However, despite evidence that a brief self-compassion programme was acceptable in this group, the feasibility of a two-session programme, notably from a research perspective, was less encouraging; possible future adaptions are discussed below.

Broadly, qualitative findings suggest the brief self-compassion intervention was acceptable and non-threatening to adolescents with type 1 diabetes. The prevalence of positive themes, the fact that participants would recommend the programme to other adolescents with type 1 diabetes, and the fact that participants showed relatively high engagement with the programme's tools outside of sessions are all suggestive of an acceptable programme. The strengths of the programme, reflected in prominent themes in the qualitative evaluation, included increases in coping resources, a greater awareness among participants of not being alone in their struggles (common humanity), and the teaching of mindfulness. Subjective increases in coping are promising as coping is central to chronic illness management for adolescents [24]. It is also worth recalling the relative prevalence of reference to common humanity and mindfulness themes rather than self-kindness, as this pattern may suggest a need to make self-kindness more salient, acceptable, or appealing to this population. Overall, however, qualitative data suggest clear acceptability of the programme content and also offer possible directions for programme refinement.

Conversely, indicators of intervention feasibility were less encouraging. Despite the relatively 'local' recruitment context, it took 8 months to acquire 27 participants, suggesting it may be difficult to recruit a sample size sufficient for a fully-powered randomized controlled trial using the same design, sample and recruitment context. As the focus on disordered eating screening was a factor that deterred involvement, future research may benefit from retaining this focus while removing screening as an inclusion criterion. In addition, nine of the 19 adolescent participants could only attend one of the two sessions because of competing commitments. This issue, coupled with the fact that a trained Making Friends with Yourself teacher would probably be needed to facilitate sessions, may further limit the feasibility of the programme, at least as delivered in a face-to-face format.

As face-to-face group sessions were shown to have limited feasibility, focus groups (including participants of the present feasibility trial) are planned to explore possible adaptions. Adapting the sessions to a digital intervention format is one possible solution to feasibility concerns that will be explored with adolescents in the focus groups. Digital psychological interventions have already been shown to be acceptable and beneficial for adolescents with type 1 diabetes [25]. In addition, digitally-based interventions involving elements of a website, an app, video conferencing and/or a chatbot would probably improve accessibility (reducing location and time barriers), independence of participants (many adolescents rely on caregiver transport or scheduling), personalization of content (regarding time and activities), scaling (across more diabetes teams) and cost-effectiveness (in terms of hiring facilitators) [26]. Further, as adolescents already use online platforms to relate to one another and for education, they may prefer this method of delivery. Further, a digital adaption may reduce the possible stigma of participating in a psychological intervention focusing on disordered eating behaviour [26]. However, specific issues with engagement and retention will need to be explored. Of particular note, careful thought will need to be given to the delivery of content designed to enhance perceptions of common humanity in the absence of face-to-face contact. Cultural considerations will also be explored further in these focus groups, by including a group solely for adolescents who identify as Māori and/or Pacific.

Taken as a whole, this study is clear in demonstrating that, while self-compassion is acceptable as a therapeutic approach for adolescents with type 1 diabetes and disordered eating behaviour, there are probably issues with feasibility. Put another way, while self-compassion remains a good conceptual fit with regard to the concerns, stressors and difficult emotions experienced by adolescents with type 1 diabetes and disordered eating behaviour, feasibility issues suggest a digital intervention is likely to be more successful in terms of recruitment, accessibility, dissemination and scaling, as well as clinical usability. Altogether, the study lays the groundwork for future research investigating self-compassion in adolescents with type 1 diabetes and disordered eating behaviour, and suggests digital interventions warrant exploration for this population to ensure clinically usability.

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### Competing interests

None declared.

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