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## Original Research

# A qualitative evaluation of a telehealth healthy lifestyle intervention for people with serious mental illness

D. O'Keeffe[1,2] and M. Clarke[1,3]

[1]DETECT Early Intervention in Psychosis Service, County Dublin, Ireland, [2]ARCHES (Advancing Recovery in Community Healthcare East Services) Recovery College, Clonskeagh Hospital, Dublin, Ireland and [3]School of Medicine, Health Sciences Centre, University College Dublin, Dublin, Ireland

## Abstract

**Objectives:** There are high levels of nutritional and metabolic, cardiovascular, and respiratory tract diseases among people diagnosed with serious mental illness (SMI). Consequently, we developed a pragmatic, affordable nutritional and exercise intervention: Choices4Health. Due to the COVID-19 pandemic, we modified this intervention so it could be delivered online. The aim of this study was to explore the experience of participating in online Choices4Health, in a real-world clinical setting, from the perspectives of service users with SMI.

**Methods:** The study aim was addressed using thematic analysis. Service users who had attended online Choices4Health, received a SMI diagnosis (defined as a schizophrenia spectrum disorder or an affective disorder), and resided in a South Dublin catchment were invited to participate. Nine participants were purposefully sampled. Semi-structured interviews were conducted by telephone. Data analysis was guided by thematic analysis procedures.

**Results:** Six themes were generated: Being ready and not overburdened (*Engagement*); Gaining knowledge and implementing it (*Learning and doing*); Viewing the intervention as appropriate and effective (*Targeted impact*); Being at home with others online (*Belonging*); Having a positive affective attitude towards the intervention (*Feeling*); and Perceiving problems with intervention delivery (*Recommended change*).

**Conclusions:** Findings suggest that online Choices4Health is, broadly speaking, acceptable from a service user perspective, but that further refinement is required to address specific issues participants identified. These relate to follow-up or programme extension, technology access, in-person contact preference, and participant inclusion criteria. Further research is required into online Choices4Health efficacy, innovations to reduce digital exclusion, and managing group dynamics in telehealth interventions.

**Keywords:** Physical health; telehealth; serious mental illness; acceptability; qualitative

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## Introduction

Physical health conditions account for more than two-thirds of early deaths among people diagnosed with serious mental illness (SMI) (Correll et al. 2015; Walker et al. 2015). Moreover, there are high levels of nutritional and metabolic, cardiovascular, and respiratory tract diseases in this group compared to the general population (Correll et al. 2017). Lifestyle factors such as sedentary behaviours and reduction in cardiorespiratory fitness have an important and potentially modifiable role in improving the health of such service users (Firth et al. 2020; Martland et al. 2023; Stubbs et al. 2016).

Lifestyle interventions have been shown to have a statistically significant, but clinically insignificant effect on weight in SMI (Speyer et al. 2019). Furthermore, in people with psychosis, meta-analytic evidence has demonstrated the modest positive effect of lifestyle interventions on weight gain prevention and cardiometabolic risk reduction (Caemmerer et al. 2012). There is also emerging evidence supporting the use of exercise in schizophrenia (Firth et al. 2015) and health-mentor delivered nutritional and exercise interventions in SMI (Van Citters et al. 2010). Nutrition interventions can also significantly improve glucose levels and a wide range of weight variables in SMI (Teasdale et al. 2017). While numerous controlled evaluations of physical activity/exercise and diet/nutritional advice community-based lifestyle interventions have been conducted (e.g. Gaughran et al. 2017; Holt et al. 2019; Bartels et al. 2015), these have all been performed in research settings. It has been argued by experts in this field that the largest obstacle to improving the life expectancy of people with SMI is no longer a knowledge gap, but an implementation one (Bartels 2015).

We utilised the emerging knowledge base to develop a pragmatic, affordable, nutritional and exercise intervention: Choices4Health. This manualised intervention was designed with a wide range of expert input – including service users with SMI and healthcare professionals. Our previously published quantitative evaluation of the feasibility of the in-person version of Choices4Health identified its potential to improve self-esteem and activity levels (Gallagher et al. 2021). Results indicated that in-person Choices4Health was practical, accessible, and inexpensive. However, this study provided limited acceptability data (only the participant retention rate) and highlighted the need to evaluate the intervention using qualitative methods.

**Corresponding author:** D. O'Keeffe; Email: donalokee@gmail.com

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Following the emergence of the COVID-19 pandemic and the subsequent need to alter intervention delivery, in line with public and occupational health advice, we modified in-person Choices4Health for online delivery. This initial in-person version comprised 12 weekly activity and education sessions and supported service users to avail of free or low-cost local community resources. The altered intervention comprised 6 individual or group online sessions focusing on physical activity, cooking skills, and targeted nutritional guidance.

Appraising online Choices4Health acceptability (in terms of both its content and its online nature) is vital to enhancing the engagement with, and the efficacy of, this intervention. This could help improve the physical health risk profile and life expectancy of people with SMI because if an intervention is not acceptable, it is unlikely to be effective. Furthermore, exploring the experience of intervention participation can identify barriers to implementation, mechanisms of change, and areas for intervention improvement.

To help address these implementation and knowledge gaps, we aimed to explore the experience of participating in the online Choices4Health intervention, in a real-world clinical setting, from the perspectives of service users with SMI. Our objectives were to appraise intervention acceptability in the COVID-19 context; to understand why particular aspects of the intervention may or may not have enhanced physical health; and to elicit participants' recommendations for intervention improvement.

## Methods

### Design

We adopted a qualitative design for the study. We collected data by telephone using semi-structured interviews and analysed data using Braun and Clarke's (2006) approach to thematic analysis. This approach positions the researcher as active in the research process rather than someone who discovers 'emerging' themes. This study was performed and reported on in accordance with the COREQ (COnsolidated criteria for REporting Qualitative research) checklist (Tong et al. 2007). Report sections where each criterion is addressed are detailed in the appendix (Supplementary Material).

### Intervention description

Participants were supported and guided through all activities online by two facilitators: a Community Mental Health Nurse and a trained chef who is a community health leader. The intervention consisted of 6 weekly activity and education sessions offered in both individual and group formats (to meet each participant's needs). These sessions focused on participants increasing physical activity (walking), learning cookery skills (by watching cooking demonstrations), and receiving targeted nutritional education (through online learning). The physical activity component focused on building up fitness to complete a 2 km walk. Participants were encouraged to avail of their local amenities and natural spaces when walking. The cookery skills component involved receiving a shopping list for a healthy nutritious meal each week, purchasing ingredients, and participants cooking a meal in their own kitchens (while mirroring the facilitators). The targeted nutritional education component involved providing information on how to manage a healthy diet, giving guidance on interpreting food labels, and offering recommendations on making healthy food choices.

As part of the intervention, participants were provided with practical objects (i.e. a pedometer, a recipe book, a food pyramid, and a weight and height table) and information (i.e. healthy lifestyle tips, how psychiatric medication impacts weight, how to read food labels, and the value of green exercise).

### Participant recruitment and sampling

Service users who had attended online Choices4Health, received a structured clinical interview for DSM-5 (First et al. 2015) SMI diagnosis (defined as a schizophrenia spectrum disorder or an affective disorder), and resided in a South Dublin catchment (with a population of 393,239) were invited to participate. First contact took place by telephone using a clinical gatekeeper. Once verbal consent to contact was obtained, the research team followed up with potential participants by telephone. All participants included in the analysis provided written informed consent and study procedures were fully explained to them. Maximum variation purposive sampling was used to recruit a sample balanced across age, gender, and psychiatric diagnosis. An appraisal of information power determined sample size (Malterud et al. 2016).

### Data collection

Nine semi-structured interviews (mean interview time: 14.45 minutes) were conducted by telephone due to COVID-19 pandemic restrictions. All interviews were guided by a topic guide centred on eliciting service users' experience of participating in online Choices4Health (see Table 1). This guide was not piloted and no repeat interviews were carried out. Interviews were conducted by DOK over the telephone, recorded on an electronic audio recorder, and transcribed. Interview notes were also taken. Only DOK and the participant were on the telephone call. Participants were at home when interviewed. Transcripts were not returned to participants for comment and/or correction.

In line with the guidance offered by Braun and Clarke (2021), we stopped interviewing when information power was deemed adequate (Malterud et al. 2016). Information power relates to study characteristics that influence dataset quality necessary to achieve objectives. We judged dataset information power as sufficient based on interview dialogue quality, our analysis strategy, whether our sample was specific or not, how narrow or broad our study aim was, and the extent of established theory use in data interpretation. We obtained demographic characteristics and psychiatric diagnosis by asking participants questions over the telephone and consulting their medical file with their consent.

### Data analysis

A thematic analysis was performed using the approach described by Braun and Clarke (2006). Analysis was exploratory, inductive, and essentialist; underpinned by relativism; and conducted using hand coding. We aimed to factually report on the experiences, perceived meanings, and reality of participants by analysing data at a semantic level. Data were analysed collaboratively by both authors (DOK and MC) coding for central ideas, concepts, and patterns, which were then assessed for similarities/differences and combined into themes to illuminate participants' experience of the intervention. Agreement was reached through consensus. Core concepts were also developed for each theme to aid their interpretation by distilling their essence into as few words as possible. Actions taken to address study rigour are outlined in Table 2. We did not perform participant checking.

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**Table 1.** Semi-structured interview topic guide

| Topic | Questions |
|---|---|
| Experience of intervention participation | Can you tell me about why you decided to take part in online Choices4Health?<br>What was the experience like for you?<br>What was it like to receive the intervention over Zoom? |
| Acceptability | Did the intervention make sense to you?<br>Did you understand it and how it works?<br>Do you believe the intervention achieved its aim of helping you improve your physical health?<br>How much effort did it require for you to take part?<br>How confident were you that you could perform the behaviours asked of you? |
| Intervention improvement | What (if any) parts of the group (delivery or content) helped you? Why were these helpful?<br>What (if any) parts of the group (delivery or content) were not helpful? Why were these not helpful?<br>Would you recommend the group to someone in a similar circumstance to you? Why/Why not?<br>What advice would you give for the further development of the intervention? |
| Interview conclusion | Is there anything else that you would like to add? |

**Table 2.** Actions taken to ensure study rigour

| Aspects of rigour | Actions taken |
|---|---|
| Study aims and objectives | Clear and concise study aims and objectives were developed. |
| Study design | Effort was made to ensure research aims/objectives and research design/method(s) cohere and that they were consistent with the epistemological position adopted. |
| Participant identification, sampling, and data collection | Participants were selected based on their ability to provide data to enable achievement of the study's aims/objectives. Justification for sample size and sampling strategy was given. Interviewers had the necessary interviewing skills to collect high quality experiential data. |
| Appropriate methodology application | Our specific approach to thematic analysis was clearly articulated. Data were interpreted rather than just paraphrased or described. All phases in the application of the data analysis approach adopted were executed. |
| Quality of study findings | Thorough engagement with the data ensured themes developed were internally rich, conceptually deep, coherent, consistent, and distinctive. |
| Exploration of deviant cases and alternative explanations | We actively searched for interview extracts that contradicted our coding schema and challenged our initial interpretations. |
| Researcher reflexivity | A reflexivity statement was provided. |
| All research processes | A detailed audit trail of study processes, the research design, and its implementation was developed. |

### *Research team*

The research team comprised DOK (PhD, male, Academic Psychologist) and MC (MD, female, Consultant Psychiatrist). Both authors are proficient qualitative researchers, have received extensive training in research methods, and have broad academic and clinical expertise in mental health. Prior to study commencement, no relationships between participants and the researchers were established and participants were only aware of the research team's qualifications and motivation (i.e. to generate knowledge and improve physical health in SMI).

### *Reflexivity statement*

We engaged in reflexive practice to scrutinise how our multiple brought selves may have impacted findings (Reinharz 1997). DOK kept a reflexive diary and made an entry following each interview. We gave consideration to how our prioritising of our own physical health is a characteristic that may not be shared by participants. We acknowledged that some participants may be indifferent to wanting to promote a healthy lifestyle. We also reflected on our own positive experiences of utilising online platforms (e.g. Zoom) in our work, to ensure they did not cause us to devalue the negative experiences reported by participants. We also contemplated how online Choices4Health was delivered by one of our colleagues to ensure negative feedback about the intervention was not inadvertently omitted from the report due to that relationship.

## Results

### *Sample and participant demographic profile*

In total, nine participants took part in the study: six female and three male. At the time of study commencement, two cohorts (18 service users) had completed online Choices4Health. Therefore, we obtained a 50 % recruitment rate. Reasons given for not participating included: not having the time, not being interested, and the preference to not share personal data. Most participants were either in the 25–34 or 35–44 age group. Schizophrenia and schizophreniform disorder were the most common diagnoses. All participants were Caucasian. Most were unemployed, single, and recorded their Leaving Certificate or Advanced Certificate/Higher Certificate as the highest level of education attained. More complete data on participant characteristics are displayed in Table 3.

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**Table 3.** Demographics and psychiatric diagnoses of the study sample

| Variable | n (%) |
|---|---|
| Gender | |
| Male | 3 (33.33) |
| Female | 6 (66.66) |
| Age group | |
| 18-24 | 1 (11.11) |
| 25-34 | 3 (33.33) |
| 35-44 | 3 (33.33) |
| 45-64 | 2 (22.22) |
| 65+ | 0 |
| Psychiatric diagnosis | |
| Schizophreniform | 3 (3.33) |
| Schizophrenia | 3 (3.33) |
| Schizoaffective disorder | 1 (1.11) |
| Major depressive disorder | 1 (1.11) |
| Bipolar I disorder | 1 (1.11) |
| Ethnicity | |
| White Irish | 9 (100.00) |
| Employment status | |
| Student | 3 (33.33) |
| Homemaker | 1 (1.11) |
| Unemployed | 5 (55.55) |
| Relationship status | |
| Single | 7 (77.77) |
| Married | 1 (1.11) |
| Separated or divorced | 1 (1.11) |
| Highest level of education attained | |
| Leaving cert | 3 (33.3) |
| Master's Degree/Postgraduate Diploma | 2 (22.2) |
| Advanced Certificate/Higher Certificate | 3 (33.3) |
| Doctoral degree | 1 (11.1) |

### Overview of the findings

This manuscript reports on the six themes and their core concepts generated from the analysis of participants' experience of online Choices4Health. The overarching thematic structure is illustrated in Fig. 1. Table 4 presents quotations in support of each theme.

### Being ready and not overburdened (Engagement)

The first theme describes how participants anticipated, were ready for, and required little effort to take part in the intervention. Participants expressed a necessity, drive, and eagerness to learn about cookery, exercise, and healthy lifestyle habits due to the primed awareness of their need to focus on their physical health. Online Choices4Health either provided the motivation to enact positive behaviour change or did not. Motivation was supported by being guided through recipes, being inspired by ideas for food shopping and cooking, and being rewarded by facilitators for achievements (e.g. being given a certificate on intervention completion).

Online participation was viewed as accessible, easy, and not requiring any extensive exertion. Participants could easily follow what was being taught over Zoom and did not feel overburdened. This ease of utilisation of the Zoom platform was particularly valued in the COVID-19 context (simply requiring an internet connection and a personal computer, laptop, or mobile phone). However, a lack of access to this technology was raised by three participants. The core concept of *Engagement* represents this theme.

### Gaining knowledge and implementing it (Learning and doing)

The second theme describes how participants experienced, throughout the intervention, attaining the knowledge and tools needed to be healthy. They also learned how to implement and utilise these. Thus, learning the practical 'how' of health.

In terms of implementing this knowledge, many participants found the intervention to be highly practical, accessible, and based on 'real-world' scenarios. This enabled them to make substantial behaviour change to improve their physical health. Some viewed intervention outcomes as measurable and consequently had a sense of achievement when they saw results. Many described the intervention as offering a new approach to thinking about diet and exercise, its practical nature ensuring they succeeded when other programmes did not. Thus, it changed some participants' ways of thinking about exercise and food. Others valued the simple, economical, and practical guidance regarding food preparation. The core concept of *Learning and doing* represents this theme.

### Viewing the intervention as appropriate and effective (Targeted impact)

The third theme describes how participants viewed the intervention in terms of it meeting their needs (the participant-intervention fit) and being effective (i.e. health promoting). Appropriateness meant the suitability of the volume of information presented, pacing of its delivery, and provision of flexible recipes. It also reflected the tailored nature of the intervention which involved facilitators being responsive to individual requirements. This meant regularly touching base around goals, involving service users in meal choices, and using specialised mental health specific skills (to consider the impact of medication on weight management and mental illness on cognition).

According to participants, being tailored was directly related to efficacy. They described intervention efficacy as the degree to which their health improved as a consequence of participation. For some, their mind-set, mood, diet, capacity to cook healthily, and frequency of physical activity and green exercise improved. Others saw the intervention as delivering efficient results in terms of their sense of wellbeing and weight. Many described improved confidence in healthy behaviours (e.g. reading food labelling) and learning how to monitor progress in weight, self-care, and cooking. The core concept of *Targeted impact* represents this theme.

### Being at home with others online (Belonging)

The fourth theme describes how participants viewed the intervention as an opportunity to belong when social contacts were drastically reduced during the height of COVID-19 lockdown in Ireland. Participants valued being able to stay at home, connect with others safely, and meet people going through the same thing (needing support with their physical health due to mental illness).

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**Figure 1.** Overarching thematic structure of themes and their related core concepts.

In general, they experienced being at ease interacting with other service users over Zoom as being supported by the facilitators touching base with them individually during the intervention. They appreciated the shared experience of working together, socialising with peers, expressing a sense of humour, and making friends. The intervention helped them address and normalise their loneliness at what was a difficult time. For some, the group dynamic led to a shared motivation to be healthy. As a result, a number of participants experienced sadness when the intervention ended. Many prized the interactive nature of the intervention, the shared learning experiences involved, and how participants supported each other in taking responsibility for physical health. The core concept of *Belonging* represents this theme.

### *Having a positive affective attitude towards the intervention (Feeling)*

The fifth theme describes how participants felt emotionally about the intervention in a general sense: the applicability of its content to their lives; its overarching acceptability and the degree to which they could tolerate it; and how they valued facilitators' personality, expertise, and guidance. Most felt happy about programme content (cooking elements and PowerPoint slides) and found all parts helpful. Against this trend, a few felt disappointed that aspects of the content were not relevant to them (e.g. smoker and drinker specific health concerns). There was a general sense from participants that taking part in online Choices4Health was an enjoyable, positive experience. They appreciated the benefits of increased exercise and enjoyed cooking. This improved their mood. Participants expressed gratitude for the positive feelings they experienced from the personality traits of the facilitators (i.e. that they were warm and kind), that they went beyond what was expected of them (e.g. facilitators had one in-person meeting with participants to establish rapport), and that they had the knowledge, skills, and expertise to deliver the intervention effectively (e.g. facilitators demonstrated the ability to engage interest). The core concept of *Feeling* represents this theme.

### *Perceiving problems with intervention delivery (Recommended change)*

The sixth theme describes how participants identified issues with how the intervention was delivered and made suggestions for intervention improvement moving forward. These recommendations were in four key areas: a desire for follow-up or programme extension, a request for better technology, a preference for more in-person contact, and a need for stricter inclusion criteria for participants.

Many participants communicated a preference for online Choices4Health to be extended beyond its manualised six weeks (due to it being highly valued). They recommended that this could involve facilitators contacting them by telephone post-intervention to check in on healthy activity adherence or modifying the programme content so that it extends to eight weeks. This, participants argued, would redress the sense that they are left to self-manage their physical health and help keep motivation for behaviour change up. Some participants reported problems with the functionality of their technology. Two participants had no access to a personal computer or laptop, and required loans from family members. These issues acted as barriers to benefiting from programme content and the peer support offered by the other participants.

As the intervention was delivered during the COVID-19 pandemic, participants received it online. Many cited the preference for more in-person interaction as a recommendation for intervention improvement. This meant 'real-world' group contact where participants cooked with the facilitators simultaneously, meals were shared afterwards, and other physical health activities could be engaged in outdoors (e.g. park running or sea swimming). Also, not being able to trial cooking in-person meant that some participants were unable to transfer cooking skills offline.

Finally, several participants were unhappy with the criteria used to select intervention participants. They described a desire for homogeneity among participants in terms of needs. For example, the inclusion of people with specific dietary requirements (e.g. diabetes mellitus) when other intervention recipients did not have such needs. According to some, this led to the intervention focus being directed at a small number of participants at times.

## Discussion

This study aimed to utilise qualitative methods to evaluate a novel telehealth healthy lifestyle intervention (online Choices4Health) for people with SMI in Dublin, Ireland. In achieving this aim, an in-depth exploration of the experience of intervention participation is offered that provides incipient evidence of intervention acceptability and demand. Data presented can inform how people diagnosed with SMI can be best supported regarding their physical health.

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**Table 4.** Quotations in support of themes generated in the analysis

| Theme | Quotation description | Quotation |
|---|---|---|
| Being ready and not overburdened (*Engagement*) | Chris's eagerness to participate in the intervention came from his belief that he needed to do more to improve his physical health while taking antipsychotic medication. Consequently he was primed to engage in online Choices4Health before he began participating. The following extract illustrates Chris's perspective on his motivation for intervention engagement: | 'I think [Chris was motivated to participate] because I'd been given the opportunity to do it and because I'm living on my own and I'm very kind of lazy as regards cooking and stuff and healthy eating … Just trying to get some ideas as to what I could do basically to think about what dinners I might try for myself.' |
| | In his interview, Sam commented on the accessibility of receiving the intervention online: | 'Yeah, like learning, I do it [participate in the intervention] online, it's easy. Yeah, just learning, coping, or not coping, learning food skills and follow recipes and do it in a class environment. I found it motivating to do more [make healthy lifestyle choices]. |
| Gaining knowledge and implementing it (*Learning and doing*) | In the following excerpt from his interview, Jonathan describes how, during the intervention, he attained knowledge and tools to assist him manage his physical health: | Interviewer: 'What was that whole experience of online Choices4Health like for you?'<br><br>Jonathan: 'Yeah. It was very good. Learnt to cook different recipes and we were given a pack with a pedometer as a way to keep track of your fitness. And cookery books, two of them. I also learnt about food labelling which is important going forward.'<br><br>Interviewer: 'And why was food labelling important for you?'<br><br>Jonathan: 'Just to see if I was getting the correct level of healthy nutrients, and we were given a graph of what's too much, what's considered a little … of protein or fats, or sodium.' |
| | In the following passage from her interview, Sandra describes learning the practical 'how' of health. The intervention offered a new way of thinking about her health by acting as a catalyst to her own research and healthy lifestyle choices: | 'Afterwards it did springboard me to do my own research, recipes, fat, and sugar so I have slowly been doing it that way … If you want to make changes, and don't know how, it starts the ball rolling without [you] having to give a whole lot of commitment or personal details. I probably have changed in a way … Just being a bit more conscious about how creamy a sauce is or how much fat is in it … [online Choices4Health facilitators] help prompt an idea in your head without so much giving you rules.' |
| Viewing the intervention as appropriate and effective (*Targeted impact*) | In the following quotation taken from Catherine's interview, she describes how the tailored nature of the intervention is what she valued most: | '[Online Choices4Health] was good as [Community Mental Health Nurse] had a background into various people on medication and that would be good for your weight as well. So that was actually good and she talked about making little changes rather than big changes, building on small changes over time. So like, for instance, an example of that was, I love my diet Coke and my coffee, and she said 'Catherine, just try to break them down a bit rather than … maybe like having loads of Coke's in a day, try to break it down to two Cokes'. So I think that the lifestyle course was much more helpful [compared to Slimming World] because it was focused on really more on you as an individual rather than a general group.' |
| | From Donna's perspective, she deemed the intervention efficacious as it was health promoting. The section of her interview outlined here illustrates a wide array of different aspects of this efficacy: | Interviewer: 'Would you recommend the group to anyone else in a similar circumstance to you?'<br><br>'One hundred percent yes. Absolutely. Because it definitely, definitely has helped me with my mind-set and even my overall mood. Not eating as much … well trying to cut back on rubbish and stuff, and even just in terms of getting out in the fresh air and walking. I just feel so much better.' |
| Being at home with others online (*Belonging*) | In this extract from Catherine's interview, she recounts how vital the social interaction via Zoom was to her wellbeing during the COVID-19 pandemic: | Catherine: 'It [social interaction] was nice too. There were six of us in total so we had a bit of interaction with the other people which is nice, isn't it. Because with everything being closed and that, it was nice to have that interaction.'<br><br>Interviewer: 'Ok. And what was that like, linking in over Zoom with others?'<br><br>Catherine: 'It was actually really good and it kind of gave you a sense … the pandemic … with me living on my own, you see like you're totally on your own. So it broke the isolation and then you might see someone else and you think maybe they're on their own [too].' |

(*Continued*)

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**Table 4.** (*Continued*)

| Theme | Quotation description | Quotation |
|---|---|---|
| Having a positive affective attitude towards the intervention (*Feeling*) | Sally valued how online Choices4Health increased her confidence, independence, and ability to take control of her own life. The following extract from her interview illustrates her broad positive feelings about participating: | Interviewer: 'What was it like for you taking part in online Choices4Health?'<br><br>Sally: 'I enjoyed it. It was nice to do the healthy cooking thing . . . well they provided information about it and they also had the instructor, somebody actually cooking . . . I thought that overall it was good.' |
| Perceiving problems with intervention delivery (Recommended change) | In the following quote taken from Catherine's interview she describes how not having a tablet or personal computer meant that she had to use her telephone to receive the intervention. Consequently, she could not see the PowerPoint slides while viewing the presenter at the same time. Catherine describes being too embarrassed to raise the issue with the facilitators: | Interviewer: 'Was there anything that didn't work?'<br><br>Catherine: 'I didn't realise it initially, well I suppose it was the first time and they [the facilitators] mightn't have known, you see I was doing this from a phone, a mobile phone. I couldn't do it on a tablet. And that was the problem initially, I couldn't see the slides.'<br><br>Interviewer: 'Oh I get you, so it didn't translate then?'<br>Catherine: 'Sure, [Community Mental Health Nurse] wouldn't have known, the first time doing it. So I was a bit embarrassed. And I think the others must be doing it on the tablet.' |
| | In the following excerpt from Sandra's interview, she articulates why she would have preferred if the intervention was in-person, to prevent her for being 'forgotten' by staff, capture and retain her attention during the intervention, and augment her experience of learning to cook certain dishes: | 'Because I'm not naturally a very outgoing talkative person, it kind of meant that I felt like I was getting forgotten a bit because there were other people and they were far more dominant in the thing. Because I didn't have anything important to say, I just wouldn't talk. Whereas like, in-person like, even if I didn't say it out to the whole group, I might say it like to whoever was beside me or something like that . . . I feel like because it was over Zoom and not in-person it's not as interactive. I feel at some points with Zoom you zone out and there would be nothing there to draw you back in. In boring points you'd zone out but in-person there's a social obligation . . . I suppose just seeing her [trained chef/ community health leader] cook, like she was saying in previous courses you would go to a kitchen and we would all make the dish as a group. That would be a lot better than just watching her cook.' |

In general, the intervention was highly acceptable to participants: it was broadly liked; participants mostly felt positive about, and were not overburdened by, taking part in it. They reported self-efficacy (i.e. confidence in engaging in the behaviours asked of them) and that the intervention was largely efficacious and appropriate to their needs. It is clear from our data that intervention acceptability was directly related to its mental health specific nature. The intervention addressed an unmet need for service users that could not be met by generic physical health interventions available within their community. In light of our findings, an adequately powered randomised controlled trial of online Choices4Health is now needed. However, this study did identify a number of issues that negatively impacted participant experiences, warranting consideration for future changes to the intervention. These include intervention duration and follow-up, challenges in accessing functional technology, the desire for more in-person interaction, and how an emphasis on specific dietary requirements can hinder engagement.

Data suggest reasons why intervention aspects may positively impact physical health. The mechanism of change identified – by which the intervention impacted behaviours, feelings, and thoughts relating to healthy lifestyles – involved attaining the knowledge and tools needed to be healthy and then learning how to implement and utilise them in a practical way to become healthier. Thus, it provided participants with a new approach to thinking about diet and exercise. The considerable need participants had to address their physical health, the positive personality traits and expertise of facilitators, the intervention's targeted practical nature, the accessibility of its online format, its good pacing and flexibility, and the ability for participants to monitor progress easily, all contributed to the acceptability perceived. While some of our findings have been previously reported in similar intervention evaluations (Pedley et al. 2018; Watkins et al. 2020; Broughan *et al.* 2021), many are novel. For example, how focusing on the health needs of specific groups (e.g. smokers) can hinder intervention engagement for others (e.g. non-smokers).

A key consideration for any intervention appraisal today is COVID-19 and the social isolation and loneliness that came from the pandemic and the measures taken to mitigate its spread (Ransing et al. 2020). Our study was no different. While the need to belong through shared experiences as an aspect of recovery has been previously reported in SMI (O'Keeffe et al. 2021; Sheridan et al. 2018), the critical role that online Choices4Health played in redressing social deprivation at this time was underscored by our participants. Evidence suggests that the pandemic has been particularly challenging for mental health populations. Pandemic related aloneness challenges the stability of routines and social contacts essential to recovery in SMI (Rains et al. 2020). Intervention participation may have helped fill this vacuum. For our participants, the social connectedness and belonging offered

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through online Choices4Health was related to the development of shared motivation to be healthy. This may be explained by the indirect effect of non-pressuring forms of social influence on behaviour change via the mediation of attitudes and intentions (Chatzisarantis et al. 2008). Shared values, identity, and beliefs may also have helped convert motivation into action (Hardcastle et al. 2015).

### Implications for clinical practice

Our data point to a need for SMI physical health interventions to be flexible and individualised to service user preferences and circumstances. In terms of potential harms or unintended consequences of the intervention, a number of issues were highlighted by participants. These issues are reasons why aspects of the intervention may not impact physical health. Not having the correct technology (i.e. a personal computer or tablet) meant that a participant's self-esteem was negatively impacted as they were embarrassed to communicate their need to the facilitators. Structural barriers hindering telehealth (e.g. poverty or social disadvantage preventing technology access) have been reported in multiple samples previously (Palinkas *et al.* 2021; Roberts and Mehrotra 2020; Van Jaarsveld 2020; Vera San Juan et al. 2021). This consideration is of particular importance in the COVID-19 context where telehealth cannot be viewed a universal solution for the inequalities in mental health due to digital exclusion (Summers-Gabr 2020). Such exclusion may help explain why people with SMI have been reported to benefit less from telehealth than other populations (Santesteban-Echarri et al. 2020). Ensuring digital access for all service users irrespective of income and social status is essential for the future use of telehealth. Research investigating the extent of digital exclusion and how it might be overcome may help with this.

Participants described a sense of abandonment to self-management due to the absence of intervention follow-up. This reflects both the degree to which the intervention was valued and the lack of support experienced once the intervention stopped. Being curtailed socially during the pandemic may have compounded this perception. While the experience of abandonment by services has been reported in SMI previously (O'Keeffe et al. 2018), our data suggest the need to integrate a follow-up or to extend the intervention timeline beyond 6 weeks to maintain motivation and sustain behaviour change. Briefly meeting service users' needs regarding physical health and then removing that support may draw attention to deficits in this area of their lives, and cause distress if not adequately and consistently addressed over time.

While there is evidence that participants were helped by facilitators to feel at ease online with other service users (see Being at home with others online [*Belonging*]), some reported the perception that the intervention overly focused on the individual needs of others. They communicated feeling that this separated them from the collective. While this is a common feature of group dynamics (Love et al. 2020), there may be something about the use of online platforms that promotes the perception of dominance or makes it more difficult for a facilitator to identify it and intervene. If a service user is already reticent to articulate and share their perspective, the online environment may further hamper self-disclosure. The complex interplay between social exclusion and SMI (Gardner et al. 2018) deserves consideration here. If someone is already marginalised in society due to a SMI diagnosis, there may be a reduced likelihood that they would have the confidence to challenge other service users who they observe as dominant. The examination of social dynamics in telehealth group interventions in mental health is under researched. Further studies in this area can unpack how egalitarianism can be further embedded in such interventions to improve engagement.

### Strengths and limitations

While the methodology adopted allowed for the generation of in-depth knowledge regarding online Choices4Health's acceptability, unintended consequences, mechanism of change, and recommendations for improvement, there were a number of study limitations. There was no ethnic or racial variation among the sample; all were white Irish; most participants were female, unemployed, and single. There is also potential for recruitment bias, as service users with a pre-established interest in (or affinity with) dieting and exercising may have been more likely to participate. These factors limit the transferability of findings to other settings. While service users helped shape the design and content of the in-person version of Choices4Health, there was no service user involvement in either the research process or intervention modification. Such involvement may augment online Choices4Health and illuminate aspects of the intervention receipt experience that otherwise could remain hidden. Finally, the intervention was adapted at speed to be delivered online during the COVID-19 pandemic. This may have impacted intervention quality.

## Conclusion

Our findings suggest that online Choices4Health is, broadly speaking, acceptable from a service user perspective, but that further refinement is required to address specific issues participants identified. These relate to follow-up or programme extension, technology access, in-person contact preference, and participant inclusion criteria. Further research is required into online Choices4Health efficacy, innovations to reduce digital exclusion, and managing group dynamics in telehealth interventions.

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**Ethical standards.** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. The study protocol was approved by the Saint John of God Hospitaller Services Group Research Ethics Committee.

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