Health Promotion International, 2023, **38**, 1–12
https://doi.org/10.1093/heapro/daad170
Article

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Qualitative evaluation of a Salutogenic Healthy Eating Programme for Dutch people with type 2 diabetes

Kristel C. M. M. Polhuis*, Maria A. Koelen, Laura I. Bouwman, and Lenneke Vaandrager

Health and Society, Social Sciences, Wageningen University and Research, Hollandseweg 1, P.O. Box 8130, 6707 KN, Wageningen, The Netherlands

*Corresponding author. E-mail: kristel.polhuis@wur.nl

Abstract

The salutogenic model of health (SMH) is a health-promoting theory that focuses on resources, strengths, and coping capacities in everyday life as a way to improve health and wellbeing. The SMH was applied to develop a programme for enabling healthy eating practices among people with type 2 diabetes mellitus (T2DM): the SALUD programme. This study aims to gain insight in how participants with T2DM experienced the content and meaning of the SALUD programme. Three focus groups with participants (six to eight participants/group) that finished the SALUD programme were conducted. The focus groups were video-recorded, transcribed *ad verbatim* and thematically analysed. The SALUD programme was perceived by the participants as a positive, meaningful learning experience. Key factors why the participants described the programme as positive were that they felt a sense of social-belonging and (emotionally) safe (theme 1). The SALUD programme's positive encouraging approach presented by the coach invited participants to join an active learning process (theme 2). Performing trial-and-error experiments and weekly reflecting on goals is what characterized active learning. The meaningfulness of the learning process (theme 3) was derived from (i) positive self-confrontation; (ii) exploring mind-body connections and perceiving improved health and (iii) noticing positive changes in their social environment (theme 3). To conclude, the study uncovered that the SALUD programme incited a positive, meaningful learning process for healthy eating and the contextual factors important in this. Potential leads to further improve the SALUD programme are discussed in order to maximize the chance of inciting an inclusive, active learning process.

Keywords: salutogenesis, diabetes type 2, dietary interventions, healthy eating, nutritional research

BACKGROUND

Type 2 diabetes mellitus (T2DM) is a public health crisis that tripled in global burden in the last 20 years (International Diabetes Federation, 2000, 2019). Healthy eating can be similarly effective for treating T2DM as medical treatment (Evert *et al.*, 2019; American Diabetes Association Professional Practice Committee, 2022). Several strategies to support people with T2DM with healthy eating are available and can be broadly categorized as cognitive-behavioural strategies that include either dietary prescription, lifestyle counselling, behavioural therapies or a mix of these (Petroni *et al.*, 2021). These strategies have been successful in initiating health benefits such as weight loss and improved $HbA1_c$, but struggled with maintaining the benefits in the long term (The Look AHEAD Research Group, 2013; Franz *et al.*, 2015; Lean *et al.*, 2019). Further optimalization of dietary strategies for people with T2DM is desirable.

Therefore, the salutogenic model of health (SMH) was applied to develop the SALUD programme (Salutogenic intervention for Type 2 Diabetes Mellitus)

Contribution to Health Promotion

- First study exploring the experiences of individuals with a novel dietary program for type 2 diabetes known as the SALUD programme.
- Participants found the SALUD programme a positive and meaningful experience, resulting in active learning and perceived health improvements.
- Changing dietary practices requires a supportive, positive and safe environment as well as reflective guidance.
- People with 2 diabetes benefit extremely from peer support when changing dietary practices.
- The SALUD programme may be further optimized by adjusting the follow-up trajectory, incorporating in-person sessions, and redefining the role of self-monitoring blood glucose.

that aimed to enable healthy eating among people with T2DM (Polhuis *et al.*, 2021). The SMH is a health-promoting theory centred around people's everyday-life context that requires to accept a holistic viewpoint on health and real-life complexity as starting points for nutritional interventions (Antonovsky, 1979). The key concept in the SMH is the Sense of Coherence (SoC) which reflects the individual's capability to cope with stressors by mobilizing (internal and external) resources in a health-promoting way (Antonovsky, 1979, 1987). Empirical evidence demonstrated that strong SoC is associated with numerous positive health outcomes. In T2DM, a recent systematic review concluded that strong SoC is associated with better glycaemic values and less T2DM-related complications (Márquez-Palacios *et al.*, 2020). However, there is a scientific knowledge gap regarding evaluating salutogenic interventions, particularly regarding salutogenic interventions promoting healthy eating practices (Mittelmark *et al.*, 2016; Langeland *et al.*, 2022b). However, a systematic review that operationalized salutogenic principles and applied them to the T2DM literature concluded that interventions that can be considered salutogenic were found to improve physical health, psychosocial health in people with T2DM (Polhuis *et al.*, 2020), which indicates practical relevancy of a salutogenic approach for T2DM.

Compared to most previous (cognitive-behavioural) T2DM programmes (The Look AHEAD Research Group, 2006; Steven *et al.*, 2016; Lean *et al.*, 2017), the SALUD programme was not performed in a (highly clinically) controlled-setting nor did it include strict dietary/lifestyle instructions. Instead, the SALUD programme stimulates behavioural change through an introspective learning process to mobilize a set of health-enhancing resources necessary for coping with challenges for healthy eating. The main theoretical strategy of the SALUD programme is mobilizing two main resources required for healthy eating behaviour in everyday life: self-identity and social support (Polhuis *et al.*, 2021). Hence, the SALUD programme is designed as a group programme that considers the participant as a whole, by probing into the deeper motivations underlying a (health) behaviour and how this relates to what someone wants to get out of life (Langeland *et al.*, 2022b). In addition, the programme prioritizes social support, conversation, reflection, and introspection over traditional knowledge transfer or top-down rules.

The effects of the SALUD programme on dietary behaviour, psychosocial and physical health have been quantitatively evaluated in a Randomised Controlled Trial (RCT) (Polhuis *et al.*, 2023). The first results of the SALUD programme look promising for health, well-being and eating behaviour (Polhuis, 2023). However, additional qualitative evaluation is strongly recommended to interpret RCTs testing complex lifestyle programmes, especially when the programme's success or failure involves an element of human-agency, such as SoC (Jagosh, 2020; Jenkins *et al.*, 2021). Relationships between human-agency and dietary behaviour are subject to context-specific interactions (Jenkins *et al.*, 2021). Qualitative evaluation can assist in uncovering these interactions, providing a clearer understanding of why, how and under which circumstances the SALUD programme works (Jenkins *et al.*, 2021). Finally, qualitative evaluation provides guidance for further optimalization of the SALUD programme (Minary *et al.*, 2019). Therefore, the aim of this study is to gain insight in how participants experienced the content and meaning of the SALUD programme.

METHODS

Theory operationalization in the SALUD programme

The SALUD programme was the result of a theory-informed and participatory process. Three main salutogenic principles operationalized in the SALUD programme (Polhuis *et al.*, 2021):

1. *Consider the participant as a whole:* in the SALUD programme, physical and psychosocial health are valued equally. A holistic perspective on health was applied in the programme's content and evaluation.

2. *Aim to incite participant's active involvement:* people with T2DM and healthcare providers were actively involved in the development of the SALUD programme. The SALUD programme was highly interactive, and one session was deliberately left 'open' to provide participants the opportunity to choose a topic based on individual needs.
3. *Aim to facilitate the participant's individual learning process*: the SALUD programme's main strategy was a self-reflective approach to enable the mobilization of the following previous identified health-promoting resources: self-identity and social support. Flexible eating strategies, disease acceptance and stress management were also important focal points (Polhuis *et al.*, 2021).

The SALUD programme is a peer group-based programme (7–8 participants per group) consisting of 12 weekly sessions and one booster session at 24 weeks. All groups were guided by the same certified and experienced coach. Due to the COVID-19 regulations in 2020–2022, the programme changed from an in-person to a web-based format. A detailed description of the themes, topics and exercises covered in each session can be found elsewhere (Polhuis *et al.*, 2021, 2023).

Participants

The target population consisted of Dutch-speaking men and women with officially diagnosed T2DM, between ≥ 18 and 75 years, who were competent to make their own decisions. Participants could not participate if they were pregnant or lactating, had severe chronic conditions other than T2DM or had bariatric surgery or an eating disorder in the past. Participants were recruited directly via general practitioners or practice nurses and via posters, advertisements in newspapers, social media, and websites. In total, there were 47 participants, with 23 participants randomly allocated to the intervention group and 22 participants allocated to the control group. No qualitative data of the control participants has been obtained. Intervention participants could bring their partners to the focus group if they wanted to. Three focus groups were conducted: group 1 (n = 7 intervention participants + 4 partners), group 2 (n = 8) and group 3 (n = 6) (21 participants in total).

Procedure

The focus groups took place after completing the final session of the SALUD programme. One week prior, the coach informed the participants about the upcoming voluntary focus groups, and asked who was willing to participate. The coach explained that the focus group would be video-recorded, transcribed, shared with the research team and used for analysis to report the programme's effects. All participants agreed to participate. The formal verbal informed consent of the participants and partners was recorded before the start of the focus group.

In advance of the focus group, the lifestyle coach asked the participants to bring an object that symbolized their experiences with the SALUD programme. The object functioned as a preparatory exercise to encourage the participants to articulate their thoughts. In addition, the objects allowed participants to tell about their experiences in *their own way*, and steer the conversation to topics that are most important to them. The SALUD coach guided the focus group; the researchers did not partake. First, the participants explained the reason why they brought their object. Then the coach asked five group questions (prepared by K.C.C.M.P.) that invited the participants to further elaborate on the personal meaning of the programme (meaningfulness) and the extent the programme enables healthier eating in everyday life (manageability/comprehensibility). The coach was given the freedom to add questions on the spot and to probe to allow participants to further. The questions were asked in an informal way. The coach ensured that each participant had the opportunity to express his/her views on each question. The focus groups' duration ranged between 102 and 111 min. The five main questions were:

- If you were the SALUD programme director, what would you change? Why?
- Would you recommend SALUD to others? Why (not)?
- What did SALUD mean to you?
- Which parts were useful for you? Which parts were not useful for you?
- Did you change things in your everyday life because of SALUD? Why?

Thematic analysis

The video-recordings were transcribed *ad verbatim*. The names and personal information were pseudonymized. The central analytical question of the data analysis was: how do participants give content and meaning to the SALUD programme? First, the transcripts were read and re-read. Then, the transcripts were open-coded on a descriptive and interpretative level. Initial codes were discussed with M.A.K., L.V., L.I.B. and K.C.M.M.P., and consequently, K.C.M.M.P. finalized the coding list. The final coding list consisted of normal codes and category codes (secondary themes) (Supplementary Table A). These codes were applied to the transcripts

using Atlas.ti version 22. Subsequently, K.C.M.M.P. categorized the codes into three tertiary themes that were again discussed among M.A.K., L.V., L.I.B. and K.C.M.M.P. (Supplementary Table B). This led to the three final themes and theme integration (Supplementary Table D). The participants' objects were also coded and analysed (Supplementary Table C). The themes are displayed with relevant participant quotes and detailed interpretative commentary. The Dutch quotes were translated into English and re-translated.

RESULTS

Participants' characteristics

Supplementary Table E displays the descriptive characteristics of the three groups. All participants were highly educated. The average age of group 1 was lower than in groups 2 and 3. Groups 2 and 3 had relatively more retired people than group 1. In groups 1 and 3, the majority of the participants were male; in group 2, most participants were female.

Individual experiences with the SALUD programme

The participants' experiences with the SALUD programme are described in three themes:

1. **The SALUD programme: a positive experience** that describes the general, positive evaluation of the SALUD programme. Social-belonging, the positive approach and feeling emotionally safe were particularly emphasized by the participants (§3.2.1).
2. **The SALUD programme: an active learning experience** that describes how participants talked about their learning as an active process to reach self-set health goals in everyday life (§3.2.2).
3. **The meaningfulness of the SALUD experience** which describes more in-depth the aspects of the learning process that the participants found meaningful (positive self-confrontation, body–mind connections and the positive effects on others). A deviant case is discussed, as well (§3.2.3).

The theme integration describes how the themes are interlinked (§3.3).

Theme 1. The SALUD programme: a positive experience

All groups experienced participation in the SALUD programme as a positive, enjoyable experience. Most participants were a bit sad that the programme had ended and indicated they would miss the weekly group-sessions. All participants would recommend the programme to others.

> **Participant 2:** When I started I didn't know that I had diabetes for a very long time, so to speak, so for me it has been just a quite big learning process for a lot of things. Learned a lot of things from other people, yes, I'm really going to miss this enormously [...], that's just the way it is. I think it is just wonderful […] you can exchange thoughts […], you hear things from other people who have had diabetes a lot longer […],and, yeah, I've found it hugely enjoyable.
> *Group 1; line 329*

Social-belonging

The participants highly appreciated the group format and peer support. Peer support was considered the most fun, motivating, and informative element of the SALUD programme. The importance of the peer support is also illustrated by five objects that participants brought, for example, participant 2's object (table sugar) symbolized that 'sugar disease' is what brought them together and allowed them to connect. These objects represented the feeling of social-belonging and experienced connectedness during the programme. Participants explained the peer support made them feel less alone and less ashamed about their disease. For some, peer support aided tremendously in disease acceptance.

> **Participant 16:** And, um, what I found nice is to experience that you are not the only one with diabetes, […] And now you notice that you are not alone, and then it's kind of shared sorrow is sorrow halved, so to speak.
> **Participant 17:** Yes, I do understand what [*participant 16*] means […] I was a bit ashamed your know. And, also, it felt it's your own fault, and, you know, that's it is known as… eh…[…] a welfare disease, you know, and then you think, yes, I was really a bit ashamed […] And now, now, yes, I actually don't have all that. Yes, it's just that, indeed, you have more people around you now that make you think it's not just your *[own]* fault.
> *Group 3; line 267-269*

Furthermore, the group's social support functioned as a 'big stick' to keep up with the individual goals. All groups used a group chat to motivate each other between the sessions by sharing pictures, personal achievements and complimenting each other. Finally, the groups indicated they have learned a lot from each other by sharing stories, practical tips and recipes.

> **Participant 12**: Yes, and you also get inspired by other people's stories […]. Also really nice to hear other things, or to get tips […].
> **Participant 14**: Yes, I really like meeting like-minded people, also on the chat […]. Normally, I don't come across diabetic people, at least, I don't go there and say: 'hello I'm [*participant 14*] and I have diabetes'. You just don't do that. But this, I really liked this a lot.
> *Group 2; line 310 – 318*

Safe place

Furthermore, participants explained that the programme felt as a positive and safe place, which was important for opening up on sensitive issues and sharing personal experiences. The groups explained that the coach had a fundamental role in creating a positive safe place and enabling the social connectedness among the participants. The coach was described as positive, encouraging, enthusiastic, driven, and experienced: 'the connecting factor' of the programme. For some, the web-based format played an important role because being in the comfort of their own home assisted in opening up emotionally.

> **Participant 8:** I found your coaching very accessible and welcoming, [*coach*], which I appreciated very much, and I still do [...] Your spontaneity and the positive energy you have, also on us, is just, yes, positive. Maybe it sounds a bit cliché, but I really mean it, and, so, you just did that well. In a very fun, playful, spontaneous way, and nobody felt hampered or inhibited or anything like that. I'm very pleased with it.
> **Participant 9:** And coaching. Coaching, you do it with your heart, right? That's not just what you learned, but your 'being' is your tool, and you definitely have that.
> *Group 2; line 816-818*

> **Participant 17:** And that the approach was positive, that helped me a lot. What I just said to [*participant 15*]: when you sin once, that is how it feels, but actually 'sinning' is a very wrong term, isn't it? You [= *coach*] always found other words like: 'yes, that can happen', you know […] Be kind to yourself in that respect, yes.
> **Participant 16:** [*coach*] also used to say: 'to fall down is okay, but staying down is not'.
> *Group 3, line 416-420*

Theme 2. The SALUD programme: an active learning experience

Besides that the SALUD programme was experienced as a positive and enjoyable experience, the participants talked about how the SALUD programme incited active learning, which is also exemplified by the objects the participants brought to the focus groups. These objects symbolized the new tools or resources or newly developed health-promoting coping strategies (nine objects) as well as goal achievement during the programme (12 objects). Participants talked about how they learned to set realistic goals, develop health-promoting coping strategies, and mobilize new tools/resources. Most participants (except for one) explained they reached their goal(s) and were proud of that, as expressed in the following quote:

> **Participant 7:** Yes, about myself, but I think it's kind of true for all of us -please shake no or nod yes- that it's actually doable, all our goals. Those were deliberately, realistically chosen but for everyone it was not heavy, not super heavy, to pursue them. And you also achieve results [*your goals*] and I got the insight: with small adjustments in your lifestyle you do achieve quite nice results. But also my social-environment becomes much more aware, and I become much more aware of how I live, and yes that has a direct impact on my [*blood*] glucose level. But, that is almost secondary at a certain point, because your life pattern changes, your food, your exercise, your stress, everything hobbles along. And as a bonus, your glucose level improves and it's not even that hard.
> *Group 1; line 463*

Trial-and-error experiments

Participants talked about trial-and-error experiments they conducted in order to find new healthier practices that fit within their everyday lives. Participants who talked about trial-and-error experiments expressed an eagerness to learn and enjoyed the process (including the failures). One example of such an experiment was the stepwise re-introduction of more unhealthy foods after a few weeks of a relatively strict diet to find a sensible balance between healthy and unhealthy foods (participant 7, group 1). In particular, self-monitoring glucose was considered useful for monitoring progress and providing direct feedback on undertaken experiments. The weekly sessions were considered 'a place for reflection' to evaluate the learning and goal-setting process/progress.

> **Participant 15:** Um, I started thinking again about my sugar intake and how to prevent a relapse […]. I think that in previous attempts I sometimes set goals that were a bit too ambitious. I could persevere for a while, but then, then I failed again. Now I'm thinking that shouldn't happen again. So how, how do I manage to stay on track? And that's actually another [*important*] insight. So I think,

> yes, I just have to grind in these new healthy eating and exercise patterns And, I must fine-tune them. Finetuning for me is, for example that I replace the soy sauce I really love by something else that is as good [*without added sugar*].
> *Group 3, line 559-561*

Health-promoting coping

The trial-and-error experiments led to the identification of existing and new resources and how to apply these in a health-promoting way. Examples of applying existing resources included using a smartwatch or (cooking) books. The most mentioned identified existing resource was social support from the direct social environment, particularly from the participants' partners. Supportive partners who help with the participants' health goals were considered extremely motivating, as these partners made implementing behavioural changes not only easier but also more enjoyable. A compliment from a partner regarding new healthy behaviours was perceived as particularly motivating, illustrated by the following quote:

> **Participant 5:** Well, if they [*the partners*] know your goal well, that's already an advantage of course, and I think they [*the partners*] can also be motivating, right? So if you a weak moment and [...] they support you again, by saying: 'you did well' or something like that, that also gives a bit of a positive feeling. […] So, you see, [*it is*] that positive approach. You can give yourself a compliment, but when someone else does it, it is often just a little bit more powerful. Perhaps, it also makes it a bit easier to do it yourself a next time.
> *Group 1; line 730*

Newly identified resources included peer support (i.e. social-belonging, motivating and learning from each other), nutrition apps (to compare the nutritional value of products), a self-made cookbook with self-selected healthy recipes and a reflection booklet to keep track of goal-setting and achievements. Participants mentioned several concrete coping strategies that they started to implement in their everyday life, such as searching for and preparing new recipes, reading nutritional labels, swapping unhealthy foods for more healthier alternatives, eating mindfully, eating more regularly, adding vegetables to recipes, homemade meals, drinking more water, limiting sugar intake and daily exercise.

Theme 3. Meaningfulness of the SALUD experience

Participants declared participation in the SALUD programme as meaningful because they experienced positive self-confrontation, explored body–mind connections and noticed a positive effect of their health progress on others. The programme was described as 'inward journey' and as 'self-exploration in a group' that led to a critical re-evaluation of health behaviours in everyday life. However, there were notable differences in which phase of that journey the participants were. For most participants, the SALUD programme was the start of an internal journey (i.e. starting to change behaviours, reaching goals, but it still takes effort); only a few reached their intended destination during the SALUD programme (i.e. lowering medications, automating new behaviours). Nevertheless, in both cases, the SALUD programme was considered meaningful. Illustrations of being on an internal journey were:

> **Participant 7:** I brought these [*objects*]: a [*finger*] prick-pen and a [*glucose*] monitor. I was actually very faithfully measuring every day for the last 3 months. Mainly because I was on journey of self-discovery, especially […] in the context of this programme... and I do hope to use those [*pen and monitor*] a lot less now. Most of you brought a new object, a remainder of this [*programme*], and I actually [*brought objects that I*] just want to forget. I'm where I want to be actually so, so that's nice. […] The periodic check-up is in a fortnight time - I'll be there for the first time so, so I hope they *[= practice nurse and GP*] agree with me that the current blood levels are um, yes sufficient. So I'm now at 51 *[=HbA1c*] without medication. I'm quite happy with that.
> *Group 1; line 283-295*

> **Participant 15:** And -eh- I brought one shoe, not two, just one [*shows one hiking shoe*]. Because I'm very aware that I'm not there where I want to be, but that I have to keep going, so I'm halfway, I think. That shoe represents exercise, but actually also, I think it's *[=the SALUD-programme*] a kind of an anchor for me. I think I did quite a lot of exercise, but not just daily. Sometimes very much, and sometimes nothing […] I actually do my exercises daily [*and*] I'm still working on my diet. It's [=*the SALUD-programme*] really a kind of an anchor. And that -eh- I hope I can improve and it will help me.
> *Group 3; line 243*

Positive self-confrontation

The SALUD programme was considered a self-confronting experience but 'in a good way'. It incited introspective and reflective overthinking of what is truly important in life by reflecting on previous thoughts, feelings, values and memories related to (eating) behaviour/habits. Feeling confronted led to more

awareness *why* one was making certain health choices, which helped the participants to change behaviours in line with health intentions. Five objects of the participants symbolized the self-confronting element of the programme, one example of these objects is a walnut:

> **Coach**: A walnut!
> **Participant 5**: Yes, so this is the happy nut and this one is the heavy nut that we had to crack occasionally, so to speak. [...] The session were fun, for sure; that is the happy nut [...]
> **Coach:** Yes, I liked it too, yes. So, that's your happy nut, and what was the heavy nut...?
> **Participant 5:** Well, yes, well, it makes you think about your goals: 'what do I actually want?' [...] We were forced to face the facts about what is really important for us, what exactly do you want and how to persevere, that kind of stuff, and that is very good for us.
> *Group 1; line 206-223*
> **In Dutch, the word for 'nut' and 'note' are the same, making the symbol more powerful in Dutch.*

> **Participant 1:** Well, mainly that you talk about your health and physical exercise, what you don't, because of hectic work. I think it's just good to look into the mirror [...] it is a good reflection of how your life is, and what you don't dwell on normally. And, that's a good thing about these sessions, so to speak, that you now just really have an insight of 'I have to change' or 'I have to approach things differently'.
> *Group 1; line 511*

Participants explained that the simultaneous combination of self-confrontation in a group and working individually on health goals led to gaining more control over health or life in general.

> **Participant 10:** I have a steering wheel, this symbolizes the programme for me. And, I actually gave it a title: 'you are the master of your own steering wheel', because, yes, you have to do it yourself, don't you?
> **Participant 14:** That's, that's funny [*participant 10*], because I was looking for a steering wheel, I thought: 'I give more direction to my life now'. And, I feel like I'm more in control now, and I couldn't find a steering wheel. Well, I find it very funny that you have brought a steering wheel!
> *Group 2, line 270-286*

> **Partner participant 6:** Yes, [*participant 6*] is really much more energetic. And, it comes from himself now, he often stands with the coat already on and says: come we're going for a walk! […] Whereas sometimes it was the other way around, […] he also had periods that he was really tired and just fell asleep on the sofa after dinner. Well, not anymore. […] I see from everything that he just feels better and that's what it's all about of course [...] And he's also much better in making those choices himself instead of me saying 'hey dear, shouldn't you this or that…'.
> *Group 1; line 375-389*

> **Participant 15:** Um, I have learnt especially in terms of my health, I, um, transfer the lead from the gut to the brain from now on.
> *Group 3, line 551*

Furthermore, participants indicated that being more in control of health/life led to increased awareness of challenges (stressors) for healthy eating. Stressors that were discussed by the groups included seasonal challenges (e.g. the winter: less energy, being less outside; summer: enjoying life, too hot to exercise), corona/sickness (being taken out of your routine), disagreements with partner about food, feeling disappointed in yourself after a set-back and tenacious habits (e.g. late night snacking). Most participants declared that they were now in a calm phase stress-wise, which made it relatively easy to actively work on health goals, but they acknowledged that sustaining healthy behaviours could be hard when stressful events occur:

> **Participant 6:** Well, I think, what I see as a kind of risk is a combination of a lot of things at once. For instance busy at work and still trying to exercise a lot. I mean I am used to my schedule that I have in mind right now, but summer time is coming up, which means that instead of doing my exercise, I will longer linger outside in the garden. So, a combination of different things makes me think: yes, these are quite busy weeks to maintain this lifestyle. […] Um, yes that, that, there is a kind of risk there, yes.
> *Group 1, line 694*

Body–mind connection

Participants appreciated the holistic and the reflective approach of the SALUD programme as well as the broad variety of discussed topics. They mentioned that the holistic approach to health and eating behaviour made them more aware of body–mind connections, such as the influence of emotional stress on their well-being, blood glucose and behaviours. Participants talked about an increased ability to identify, assess, understand and respond appropriately to internal signals, which helped in understanding their bodies better. Participants mentioned they were eating more mindfully and became more aware of different types of hunger, satiety signals and reasons for food cravings. Participants noticed beneficial physical effects

that varied from lowered blood glucose medication or a considerable weight loss to less tangible physical effects, such as simply feeling better (e.g. less bloated, or more energized). The mentioned psychosocial health effects included: feeling acknowledged, more confident, calmer, better able to deal with emotional stress, more self-compassionate and better able to accept their disease after the SALUD programme. The partners in group 1 affirmed the noticeable improvement in the participants' overall health.

> **Participant 6:** And what I liked about the programme [...] that it's not some kind of glorified diet programme, like weight watchers and all that, but that it is much broader than just, just that. You know, a piece of mindfulness, a piece of stress management, a piece of food awareness - but not so much focused on losing 10-20 kilos for example. Yes, that's my point: that the overall programme also makes you think at multiple levels. It opens doors you didn't have before -eh- so it opens doors of, of things. I have already started measuring [*blood glucose*] for example during this programme, yes. Didn't do that before either. All this, in order to get to know your body and how it reacts.
> *Group 1; line 471-477*

> **Participant 8**: Well, I found the [*process of*] mind-setting [*important*] - it has given me more insight. I am someone with a very emotional character, you can't always tell, but that's how I am, I know that about myself, and I know that if I have it all neatly lined up in my head, I feel much better, both physically and mentally. So I did learn that it's good to relativize, also with regard to your glucose and so on. […] Allow yourself moments of rest in order to improve yourself from there. […] I think physically I'm doing pretty well, but with me, it's more in my head.
> *Group 2; line 500 – 504*

> **Participant 17:** I have discovered that […] stress has a huge impact. I had that glucose monitor in December, and, then, it [*blood glucose*] was always very high. And now, I have another job and […] everything is much calmer and my blood levels are better. So, I really think stress has a lot of influence, which I didn't expect before.
> *Group 3, line 347-349*

Positive effect on others

The SALUD programme was experienced as meaningful because the participants noticed that their health process had a positive effect on their close social environment. Several participants noticed that their health progress inspired family members to do the same. In addition, for certain participants, the SALUD programme helped to talk openly about eating behaviour with their partners without frustrating each other.

> **Participant 8:** I also like that my wife is also a bit contaminated by it.
> *Group 2; line 202*

> **Partner participant 7:** I am actually very happy that he was able to take part in the programme, because I have been saying certain things for years, but the penny never dropped. And he was always like: 'well, that food you eat, and the healthy meals with so many vegetables, I don't need that'. That's all nonsense of course. And: 'pizza is healthy', and I could say whatever I want, but I say, yes, of course pizza is not healthy…
> **Participant 7**: …it has vegetables on it.
> **Partner participant 7:** He always says: 'it has vegetables on it'. And 'the Italians eat it too, and pizza's healthy'- yes. And he kept saying that, and then I thought, yes, I eventually stopped, I think, there's no point in explaining it, he actually had to experience it himself, it didn't really come across. […]
> **Participant 7:** But, besides that, I haven't changed at all! [*both laughing*]
> *Group 1; line 351-353*

The deviant case: externally focused coping

One participant had a different experience with the SALUD programme compared to the rest. Like the others, participant 21 enjoyed the SALUD programme but the programme did not lead to any behavioural change. Participant 21 was the only participant that was not able to reach (any of) his goals, in fact, he gained weight and glucose levels worsened:

> **Participant 21:** That object is a scale, a kitchen scale […] I gain weight and my insulin levels go up; they are not all that good.
> *Group 3; line 626-630*

Participant 21 experienced the programme as confronting but did not talk in a reflective or introspective way that was typical for the others. Participant 21 did not mention the typical error-and-trial experiments with corresponding personal reflections and lessons learned nor issues related to interoceptive ability that seemed important for the others. In addition, contrary to the other participants, participant 21's coping strategies were more externally focused with limited acknowledgement for his own individual responsibility for his health (e.g. his wife has to 'unlearn' things).

Participant 21: Well, I found it valuable [*to discover*] that calories exist, [*and*] that you have to take that into account. I found it valuable that I had to exercise more, I knew that, but now I was forced to face the facts.
Coach: Which facts and did you also get new insights about yourself?
Participant 21: No, no, no, I've known myself longer than today. No, no.
Group 3; line 646-654

Coach: Could your partner help you in some way to continue to work towards your goals?
Participant 21: Well, by not tempting me. She shouldn't bring in things that are bad for me. She can eat that herself. But if she offers it to me, that's a step too far. […] So she has to unlearn offering me something that is not good for me.
Group 3; line 997-998

Theme integration

Theme 1 described that the participants experienced SALUD as a positive, enjoyable and sociable experience, which invited an active learning process (theme 2). The learning process is characterized by realistically self-set goals, and trial-and-error experiments, which led to developing health-promoting strategies and mobilizing new tools/resources. The learning process was experienced as meaningful because it led to a better overall grip on health and life (theme 3). Three aspects were fundamental in this: (i) positive self-confrontation aroused more awareness *why* one was making certain health choices; (ii) a better understanding of mind-body connections; and (iii) positive changes in the participants' social environment. The positive, encouraging approach and peer support (theme 1) seemed important for participants to be able to cope with the self-confronting aspect of programme (theme 3). The meaningful learning process in its turn contributed to the positive evaluation of the SALUD programme (theme 1). A deviant experience reveals that active and reflective engagement is a vital prerequisite for an impactful experience with the SALUD programme because without, the SALUD programme is just a pleasant, sociable gathering (Supplementary Figure F summarizes the shared experiences of the participants with the SALUD programme and the interlinkages between the themes).

DISCUSSION

Participants experienced the SALUD programme as a positive and meaningful learning process, in which they developed new coping strategies, gained new self-insights and perceived improved overall health. The learning process was experienced as meaningful as the process led to a better overall grip on health and life. Experiencing more grip on health became specifically clear when the participants talked about the objects that symbolized their experience with SALUD. Experiences of a better grip on health and life directly refer to the concept of SoC, which is also in line with the significant observed SoC improvement among the participants in the quantitative evaluation of SALUD (Polhuis, 2023). Three aspects/mechanisms were fundamental in this process towards more grip on health and life.

First of all, the participants declared that positive self-confrontation was important for changing eating behaviours. The positive self-confrontation aroused more awareness *why* one was making certain health choices. This finding is important because confrontational health experiences have the potential to invoke sustainable dietary improvements (Jutterström *et al.*, 2012; Tanenbaum *et al.*, 2015; Rigby *et al.*, 2022).

Second, the participants talked about a better understanding of mind-body connections. Participants used self-monitoring blood glucose as a feedback strategy to explore body–mind connections. Indeed, self-monitoring glucose has been proven to be an effective strategy to enhance and sustain health among people with T2DM (Hood *et al.*, 2015; Varkevisser *et al.*, 2019). This study adds to that evidence by indicating that instructions for self-monitoring strategies need to extend beyond mere technical instructions; these strategies should be integrated within a broader, meaningful context, emphasizing their role as a tool rather than a standalone goal. However, some participants expressed they would have liked more concrete steering regarding self-monitoring blood glucose, for example by receiving a glucose monitor at the start of the programme or more detailed instructions on how to use a glucose monitor in combination with SALUD. The role of self-monitoring blood glucose in the SALUD programme is something to further consider to facilitate active engagement with the programme.

Third, the participants talked about the positive changes in the participants' social environment. Participants mentioned that their participation in the SALUD programme enabled social support from family and partners. In addition, some participants inspired family members to start improving their health. The peer support during SALUD was considered important for disease acceptance, which is important because victim-blaming and stigma is common among people with T2DM and this can negatively impact T2DM self-management (Himmelstein and Puhl, 2021). In addition to peer support, the positive, encouraging approach seemed important to cope with the self-confronting aspect of the SALUD

programme. Self-reflection and introspection can be demanding. The coach had the challenging responsibility to keep the delicate balance between the health-promoting and health-damaging aspects of self-confrontation: moderate discomfort is good, but excessive discomfort may cause participants to disengage. An imbalance between beneficial and damaging aspects of self-confrontation might have played a role in the deviant case. Similar to the others, the deviant case mentioned that the programme was self-confronting, but he was not actively and reflectively participating in a learning process. Perhaps the deviant case needed more time and/or guidance to work through the experienced self-confrontation before being able to engage actively in a learning process. To a certain extent, this sentiment appears to be echoed by other participants, as all groups indicated a preference for a longer voluntary follow-up period (6 instead of 3 months).

These three fundamental identified aspects for a meaningful learning process are in line with the self-tuning model for health-promoting coping (Langeland *et al.*, 2022a). Both the current findings and self-tuning model emphasize three important mechanisms for developing health-promoting coping or SoC: (i) unlock an 'inner drive' by positive self-confrontation to catalyse health-promoting learning process; (ii) compassionate, authentic and accepting social support; and (iii) sensing and being mindfully present (body–mind connections) (Langeland *et al.*, 2022a). According to the self-tuning model, these mechanisms contribute to self-tuning: a health-promoting competence of continuous '*exploring, sensing, reflecting, and thus reacting to a situation with increasingly more adaptive coping*' (Langeland *et al.*, 2022a). The self-tuning model has evolved from investigating job engagement and burnout (Langeland *et al.*, 2022a). The current study suggests that the self-tuning model could be applied in a broader health setting.

Another interesting finding is that meaningful peer support and social connectedness were established via a web-based programme. The fact that the deviant case considered the programme still as a positive experience further exemplifies the positive atmosphere maintained throughout the programme. Recent research also demonstrated that in-person interventions adapted for web-based delivery appear to be equally effective as delivery in-person (Santarossa *et al.*, 2018; Al-Badri *et al.*, 2022). The SALUD participants generally preferred the web-based format for reasons of saving time and travelling costs, but also for feeling more comfortable at home. However, the groups recommended a combination between in-person and web-based sessions because the participants would enjoy meeting each other in person.

Finally, the findings are in line with previous studies that demonstrated that salutogenic factors driving healthy eating are different from risk factors driving unhealthy eating (Swan *et al.*, 2015). For example, an extensive systematic review demonstrated that demographic determinants—age, gender, socioeconomical status—do not predict weight-loss maintenance (Varkevisser *et al.*, 2019). The most important determinants for successful healthy eating and weight-loss maintenance appear to be those that relate to coping abilities, such as problem-solving, self-efficacy and SoC (Hood *et al.*, 2015; Swan *et al.*, 2015; Varkevisser *et al.*, 2019). Contrary to demographic determinants, coping abilities can be trained and enhanced. The present study suggests that this requires a supportive, positive, safe and reflective environment.

Strengths and limitations

An important strength is that all SALUD participants who finished the programme participated in the focus groups. A second strength is the use of the objects because these objects allowed participants to share their experiences in their own way. A limitation is that the experiences of the participants allocated to the control group in the SALUD-RCT were not qualitatively assessed, which would have provided an in-depth understanding of the SALUD programme. Finally, it is important to note that the coach who guided the focus groups is not a researcher. A qualitatively trained/experienced researcher might have handled the group conversations differently. However, the SALUD coach was experienced in guiding group conversations and the established group dynamics during the programme were not interfered by adding a new person to the group. Finally, to be able to investigate the salutogenic mechanisms more in-depth, a realist evaluation of the SALUD programme seems necessary. The current findings provide a valuable starting point to design such a realist evaluation study.

CONCLUSION

The present evaluation complements the quantitative evaluation of the SALUD programme by uncovering aspects that are difficult to measure quantitatively: a learning process/mechanisms for health-promoting coping and the contextual factors that are important for facilitating such a learning process. The results highlight the importance of peer support in a supportive, positive, safe and reflective environment for the T2DM healthcare sector. The evaluation also yielded the following points of the SALUD programme that sought further consideration: the follow-up trajectory, adding in-person sessions to the programme, and the role of self-monitoring blood glucose within the

programme. These aspects may be adjusted to further optimize the SALUD programme in order to maximize the chance of inciting an active learning process for all kinds of future participants.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Health Promotion International* online.

AUTHOR CONTRIBUTIONS

Kristel CMM Polhuis: conceptualization, data curation; data analysis; methodology; data visualization; Writing—original draft. Lenneke Vaandrager: supervision; data analysis; writing—review & editing. Laura I. Bouwman: supervision; data analysis; writing—review & editing. Maria A Koelen: supervision; data analysis; writing—review & editing.

ACKNOWLEDGEMENTS

We thank the Edema-Steernberg Foundation for the financial possibility and academic freedom to execute the current study. We are extremely grateful to all the participants; without you, the study would not have been possible. A special thank you to Annemone Siffels for her assistance in transcribing the focus groups and the assistance in the initial steps of the data analysis as part of the MSc thesis.

FUNDING

This work was supported by the Edema-Steernberg Foundation. The Edema-Steernberg Foundation is a Dutch non-profit organization that stimulates multidisciplinary nutritional research.

ETHICAL APPROVAL

Medical Ethical Committee Oost-Nederland (METC Oost-Nederland) has granted medical-ethical approval for the RCT study (number 2021-12949). Additionally, the present qualitative analysis has been retrospectively inspected by the social-ethical committee (SEC) of Wageningen University and Research that decided that the requirements of fair and respectful treatment of participants were fulfilled and the burden of the study for the participants was acceptable.

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