Healthy Eating in T2D

Subjects: Health Care Sciences & Services

Contributor: M Carolina Archundia-Herrera

Type 2 diabetes (T2D) is a complex, multifaceted disease and its treatment involves lifestyle intervention (LI) programs that participants may find difficult to adopt and maintain. The objective of this study is to understand the lived experiences of participants with T2D regarding healthy eating behavior change, in order to identify and incorporate relevant information, skills, and educational approaches into LI programs. An explorative qualitative study was undertaken. Purposeful sampling was used to recruit 15 participants. One-on-one, semi-structured, open-ended, and in-depth interviews were conducted. An essentialist paradigm was adopted to accurately report the experiences, meaning, and reality of participants. An inductive approach was used to analyze the data. Participants reported that being diagnosed and living with T2D could be overwhelming, and their ability to manage was influenced by health care providers (HCP), family, and individual context. Many experienced a loop of “good–bad” eating behaviors. Participants expressed desires for future diabetes management that would include program content (nutrition, physical activity, mental health, foot care, and consequences of T2D), program features (understand context, explicit information, individualized, hands-on learning, applicable, realistic, incremental, and practical), program components (access to multidisciplinary team, set goals, track progress and be held accountable, one-on-one sessions, group support, maintenance/follow-up), and policy change. In conclusion, the results of this study indicate that T2D management requires more extensive, comprehensive, and ongoing support, guided by the individual participant.

type 2 diabetes | lifestyle intervention program | healthy eating | qualitative

1. Introduction

Type 2 diabetes (T2D) is a complex disease driven by multiple pathophysiological processes [1]. Thus, a multidisciplinary approach that integrates the four main pillars of T2D management including self-management education (SME) and support (SMS), nutrition therapy (NT), physical activity (PA) and pharmacological therapy is recommended to achieve optimal glycemic management, thereby minimizing disease complications [2]. However, incorporating these recommendations into daily life represents a heavy, sometimes overwhelming burden on patients, who need to implement multiple treatment strategies including adherence to medications, as well as changes in eating habits and physical activity.

Lifestyle interventions (LI) that include change in diet and PA as well as education help guide participants to implement changes, resulting in significant improvement in cardiovascular disease risk factors [3], clinical outcomes [4][5], improved beta cell function [6], self-management practices, and quality of life (QOL) [7]. Through a process of

SME and SMS people with T2D can acquire the motivation, knowledge, and skills necessary to manage blood glucose [8].

Short-term effectiveness of LI programs to manage T2D has been documented in high [9][10], middle, and low income countries [11], and ethnic minorities [12] but their long-term effects are often attenuated [9][10][11][12], pointing to a gap in knowledge between what people learn in the programs and their actions over the long run [13]. This is especially true for NT. As reflected in the Diabetes Canada NT Guidelines [14], transitioning to a healthier eating pattern may necessitate several behavior modifications and acquisition of food skills to adequately understand the recommendations and to select, plan, prepare, and store meals and snacks. Thus, this behavior is especially hard to achieve and sustain over decades [15]. There is a lack of research aimed at identifying which of the NT guidelines are particularly challenging to adopt and which facilitators could be potential intervention components. In addition, the global increase in access to ultra-processed foods [16] supports busy lifestyles, but diminishes food skills value and importance, consequently, home-prepared meals using whole ingredients and cooking skills are declining [17]. Several studies have aimed to identify barriers and facilitators to sustained self-management of T2D [18][19]. However there is an unequivocal imbalance between facilitators and barriers in the interview guides used [20], for example, the term “facilitator” is used interchangeably with less specific words (e.g., “help you” or “easier”) and is usually mentioned only once or twice, whereas the term “barrier” is mentioned literally and several times in the interviews [18][21][22][23]. This prejudices the study to identify barriers more than facilitators. Thus, little is known about how to facilitate healthy eating, especially from the participants’ perspectives. The aim of this study is to work with T2D participants to understand their perceptions and lived experiences regarding healthy eating behavior change, enabling the identification and incorporation of relevant intervention components into T2D LI programs.

2. Current Insights on Type 2 Diabetes and Eating Habits

Most of our sample (*n* = 10) was represented by an age group over 61 years; thus, it is understandable that these participants’ motivations were partly to avoid losing their independence, which has been reported previously in older women [24]. Likewise, Crossley, through the use of focus groups, illustrated how health is connected to morality [25]; participants’ motivations to change was partly to avoid being a burden to others and to maintain their independence, corresponding with these results. Thus, it is understandable that age and independency are factors that promote motivation in older adults [26]. As noted by Atkins and Michie [27], our results reflect that healthy eating behaviors are influenced by and form part of a complex, evolving system. Participants indicated that their health, background, history, and their external environment influence their behavior in that work, family, and HCP promote changes in their behavior towards more positive or negative outcomes.

Participants had a good understanding of the relationship between T2D and eating habits. When participants were asked what healthy eating habits were, a wide variety of accurate information was described, referring to types of foods, nutrients, degree of processing, and perceived nutritional value. These findings are consistent with a previous study that explored healthy eating [28]. In line with previous results [29][30], a health behavior cycle was described consistently throughout the interviews, where participants reported going through cycles of “good behavior” and “bad behavior”. Qualitative studies have provided insight towards understanding this fluctuating

behavior, for example, participants' identities, social factors, resources, environment, and competing priorities influence eating behavior. A deeper description of these factors is beyond the scope of the present study, but further detail can be found in the review by Bisogni [31].

Even though the interview guide was developed to focus on healthy eating and how to facilitate adherence to the guidelines, programming requirements outside this scope were mentioned. The "ideal" program content, as informed by participants, should involve care that covers the major pillars of T2D care including SME + SMS; NT; PA; pharmaceutical recommendations; foot, eye, and dental care; as well as mental health, aligning with Diabetes Canada NT Guidelines [2] and reflecting on the complexity of T2D management [1]. In addition, several additional program components and specific program features were sought. In regard to the latter, active learning, hands-on approaches were desired for all of the knowledge being taught to aid in understanding and retention of information. For example, instead of just recommending or teaching what not to eat, participants would like to learn what they can eat, how to prepare it (cooking classes), and what it looks like in a real-life situation (e.g., drive through at a fast-food restaurant). Another example is when teaching the relationship between food, PA and blood glucose levels, the lesson should incorporate active real-life practice so that participants can visualize the outcomes of their actions. Fritschi (2019), through the use of content analysis, reported that a personalized supportive approach from the study team together with active learning and self-monitoring are factors that enhanced knowledge and improved health behaviors [32]. In addition, promoting personal discovery through self-monitoring (cause and effect) and/or patterns of associations (daily activities and changes in blood glucose levels) generates subsequent action planning resulting in sustainable behavioral change [33].

Interviewed participants emphasized the importance of researchers and HCPs learning who is in the program—understand context—because through this understanding program leaders, can provide individualized advice that will be effective for each participant. Research in this area has recently been developed by the 5As Team, which showed that patients with obesity want personalized, evidence-based care [34][35].

Thus, future programs for T2D management should consider incorporating the key processes for a personalized approach (convey compassion and listening, try to make sense of root causes and contextual factors, focus on whole-person health and action planning, and foster reflection and experimentation within others) to support and manage health improvements [36]. These concepts mirror the expressed needs of people with T2D in this study. This approach has been recently incorporated into the Canadian Obesity Guidelines, which conceptualizes a patient-centered health outcome approach [37]. Consideration should be given to adapting this approach for people with T2D. Along the same lines, future program developers should consider increasing the skills, abilities, and confidence of HCPs to individualize care, which could be achieved, in part, by training in healthy conversation skills, a technique that allows the development of competencies for identifying and creating opportunities to hold healthy conversations, using open-ended questions, reflecting on practice, listening more than talking, and supporting SMARTER (specific; measurable; action-orientated; realistic; timed; evaluated and reviewed) goal setting [38]. Such competencies would address needs revealed by themes induced from the participants' interviews. Furthermore, an ongoing group or peer support system should be incorporated into programming. Such support groups may provide a safe space where empathy, acceptance, and understanding can be sought. Mohr et al.

showed that these groups were more effective when moderators were integrated into the team [19] and, recently, such groups have moved to (or added) online interfaces though social media such as WhatsApp, Twitter, and Facebook [39]; thus, enabling interactions even when face-to-face meetings are not possible. This could be important for uptake, given the priority juggling challenges voiced by our participants.

Lastly, changes at the policy level were requested, including clearly marked “healthy options” spaces in convenience stores to facilitate healthy eating. Research in this area has advanced in recent years. Mexico implemented front-of-pack warning labels on food and beverage products deemed unhealthy to help people make healthier choices; however, it is too early to evaluate the effectiveness of this approach [40]. In Canada, research on how food environments shape the availability, affordability, and social acceptance of food and nutrition choices is growing. Nutrition report cards have been developed to assess the healthfulness of children’s food environments [41] and could be applied to key environments for people with T2D to support healthy eating in this population.

References

1. Pearson, E.R. Type 2 diabetes: A multifaceted disease. Diabetologia 2019, 62, 1107–1112.
2. Diabetes Canada Clinical Practice Guidelines Expert Committee. Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can. J. Diabetes 2018, 42 (Suppl. S1), S1–S325.
3. Chen, L.; Pei, J.-H.; Kuang, J.; Chen, H.-M.; Chen, Z.; Li, Z.-W.; Yang, H.-Z. Effect of lifestyle intervention in patients with type 2 diabetes: A meta-analysis. Metabolism 2015, 64, 338–347.
4. Lim, L.L.; Lau, E.S.; Kong, A.P.; Davies, M.J.; Levitt, N.S.; Eliasson, B.; Aguilar-Salinas, C.A.; Ning, G.; Seino, Y.; So, W.Y. Aspects of multicomponent integrated care promote sustained improvement in surrogate clinical outcomes: A systematic review and meta-analysis. Diabetes Care 2018, 41, 1312–1320.
5. Brown, S.A. Studies of educational interventions and outcomes in diabetic adults: A meta-analysis revisited. Patient Educ. Couns. 1990, 16, 189–215.
6. Johansen, M.Y.; Karstoft, K.; MacDonald, C.S.; Hansen, K.B.; Ellingsgaard, H.; Hartmann, B.; Albrechtsen, N.J.W.; Vaag, A.A.; Holst, J.J.; Pedersen, B.K. Effects of an intensive lifestyle intervention on the underlying mechanisms of improved glycaemic control in individuals with type 2 diabetes: A secondary analysis of a randomised clinical trial. Diabetologia 2020, 63, 2410–2422.
7. Cochran, J.; Conn, V.S. Meta-analysis of quality of life outcomes following diabetes self-management training. Diabetes Educ. 2008, 34, 815–823.

8. Sherifali, D.; Berard, L.D.; Gucciardi, E.; MacDonald, B.; MacNeill, G. Self-management education and support. Can. J. Diabetes 2018, 42, S36–S41.
9. Tricco, A.C.; Ivers, N.M.; Grimshaw, J.M.; Moher, D.; Turner, L.; Galipeau, J.; Halperin, I.; Vachon, B.; Ramsay, T.; Manns, B. Effectiveness of quality improvement strategies on the management of diabetes: A systematic review and meta-analysis. Lancet 2012, 379, 2252–2261.
10. Ong, S.E.; Koh, J.J.K.; Toh, S.-A.E.S.; Chia, K.S.; Balabanova, D.; McKee, M.; Perel, P.; Legido-Quigley, H. Assessing the influence of health systems on type 2 diabetes mellitus awareness, treatment, adherence and control: A systematic review. PLoS ONE 2018, 13, e0195086.
11. Flood, D.; Hane, J.; Dunn, M.; Brown, S.J.; Wagenaar, B.H.; Rogers, E.A.; Heisler, M.; Rohloff, P.; Chopra, V. Health system interventions for adults with type 2 diabetes in low-and middle-income countries: A systematic review and meta-analysis. PLoS Med. 2020, 17, e1003434.
12. Attridge, M.; Creamer, J.; Ramsden, M.; Cannings-John, R.; Hawthorne, K. Culturally appropriate health education for people in ethnic minority groups with type 2 diabetes mellitus. Cochrane Database Syst. Rev. 2014.
13. Archundia-Herrera, M.; Subhan, F.B.; Sakowsky, C.; Watkins, K.; Chan, C.B. A Mixed Methods Evaluation of a Randomized Control Trial to Evaluate the Effectiveness of the Pure Prairie Living Program in Type 2 Diabetes Participants. Healthcare 2020, 8, 153.
14. Sievenpiper, J.L.; Chan, C.B.; Dworatzek, P.D.; Freeze, C.; Williams, S.L. Nutrition therapy. Can. J. Diabetes 2018, 42, S64–S79.
15. Forouhi, N.G.; Misra, A.; Mohan, V.; Taylor, R.; Yancy, W. Dietary and nutritional approaches for prevention and management of type 2 diabetes. Bmj 2018, 361, k2234.
16. Baker, P.; Machado, P.; Santos, T.; Sievert, K.; Backholer, K.; Hadjikakou, M.; Russell, C.; Huse, O.; Bell, C.; Scrinis, G. Ultra-processed foods and the nutrition transition: Global, regional and national trends, food systems transformations and political economy drivers. Obes. Rev. 2020, 21, e13126.
17. Slater, J. Is cooking dead? The state of Home Economics Food and Nutrition education in a Canadian province. Int. J. Consum. Stud. 2013, 37, 617–624.
18. Booth, A.O.; Lowis, C.; Dean, M.; Hunter, S.J.; McKinley, M.C. Diet and physical activity in the self-management of type 2 diabetes: Barriers and facilitators identified by patients and health professionals. Prim. Health Care Res. Dev. 2013, 14, 293–306.
19. Mohr, D.C.; Burns, M.N.; Schueller, S.M.; Clarke, G.; Klinkman, M. Behavioral intervention technologies: Evidence review and recommendations for future research in mental health. Gen. Hosp. Psychiatry 2013, 35, 332–338.

20. Armstrong, C.; University of Alberta, Edmonton, AB, Canada; Fettig, A.; University of Alberta, Edmonton, AB, Canada. Exploring Patient Experience of Healthy Eating Behaviour Change for Type 2 Diabetes Self-Management. Personal communication, 2020.
21. Laranjo, L.; Neves, A.L.; Costa, A.; Ribeiro, R.T.; Couto, L.; Sá, A.B. Facilitators, barriers and expectations in the self-management of type 2 diabetes—A qualitative study from Portugal. Eur. J. Gen. Pract. 2015, 21, 103–110.
22. Abel, S.; Whitehead, L.; Coppell, K. Making dietary changes following a diagnosis of prediabetes: A qualitative exploration of barriers and facilitators. Diabet. Med. 2018, 35, 1693–1699.
23. Carolan, M.; Holman, J.; Ferrari, M. Experiences of diabetes self-management: A focus group study among A ustralians with type 2 diabetes. J. Clin. Nurs. 2015, 24, 1011–1023.
24. Gustafsson, K.; Andersson, I.; Andersson, J.; Fjellström, C.; Sidenvall, B. Older Women's Perceptions of Independence Versus Dependence in Food-Related Work. Public Health Nurs. 2003, 20, 237–247.
25. Crossley, M.L. Would you consider yourself a healthy person?: Using focus groups to explore health as a moral phenomenon. J. Health Psychol. 2003, 8, 501–514.
26. Chambers, S.; Lobb, A.; Butler, L.T.; Traill, W.B. The influence of age and gender on food choice: A focus group exploration. Int. J. Consum. Stud. 2008, 32, 356–365.
27. Atkins, L.; Michie, S. Designing interventions to change eating behaviours. Proc. Nutr. Soc. 2015, 74, 164–170.
28. Povey, R.; Conner, M.; Sparks, P.; James, R.; Shepherd, R. Interpretations of healthy and unhealthy eating, and implications for dietary change. Health Educ. Res. 1998, 13, 171–183.
29. Lake, A.A.; Hyland, R.M.; Rugg-Gunn, A.J.; Wood, C.E.; Mathers, J.C.; Adamson, A.J. Healthy eating: Perceptions and practice (the ASH30 study). Appetite 2007, 48, 176–182.
30. Paquette, M.-C. Perceptions of healthy eating: State of knowledge and research gaps. Can. J. Public Health 2005, 96, S16–S21.
31. Bisogni, C.A.; Jastran, M.; Seligson, M.; Thompson, A. How people interpret healthy eating: Contributions of qualitative research. J. Nutr. Educ. Behav. 2012, 44, 282–301.
32. Fritschi, C.; Martyn-Nemeth, P.; Zhu, B.; Jung Kim, M. Active learning: Lessons from women with type 2 diabetes in a walking program. Diabetes Educ. 2019, 45, 370–379.
33. Mamykina, L.; Heitkemper, E.M.; Smaldone, A.M.; Kukafka, R.; Cole-Lewis, H.J.; Davidson, P.G.; Mynatt, E.D.; Cassells, A.; Tobin, J.N.; Hripcsak, G. Personal discovery in diabetes self-management: Discovering cause and effect using self-monitoring data. J. Biomed. Inform. 2017, 76, 1–8.

34. Asselin, J.; Osunlana, A.; Ogunleye, A.; Sharma, A.; Campbell-Scherer, D. Challenges in interdisciplinary weight management in primary care: Lessons learned from the 5As Team study. Clin. Obes. 2016, 6, 124–132.
35. Torti, J.; Luig, T.; Borowitz, M.; Johnson, J.A.; Sharma, A.M.; Campbell-Scherer, D.L. The 5As team patient study: Patient perspectives on the role of primary care in obesity management. BMC Fam. Pract. 2017, 18, 19.
36. Luig, T.; Anderson, R.; Sharma, A.; Campbell-Scherer, D. Personalizing obesity assessment and care planning in primary care: Patient experience and outcomes in everyday life and health. Clin. Obes. 2018, 8, 411–423.
37. Wharton, S.; Lau, D.C.; Vallis, M.; Sharma, A.M.; Biertho, L.; Campbell-Scherer, D.; Adamo, K.; Alberga, A.; Bell, R.; Boulé, N. Obesity in adults: A clinical practice guideline. CMAJ 2020, 192, E875–E891.
38. Black, C.; Lawrence, W.; Cradock, S.; Ntani, G.; Tinati, T.; Jarman, M.; Begum, R.; Inskip, H.; Cooper, C.; Barker, M. Healthy conversation skills: Increasing competence and confidence in front-line staff. Public Health Nutr. 2014, 17, 700–707.
39. Rains, S.A.; Peterson, E.B.; Wright, K.B. Communicating social support in computer-mediated contexts: A meta-analytic review of content analyses examining support messages shared online among individuals coping with illness. Commun. Monogr. 2015, 82, 403–430.
40. White, M.; Barquera, S. Mexico Adopts Food Warning Labels, Why Now? Health Syst. Reform 2020, 6, e1752063.
41. Ferdinands, A.R.; Olstad, D.L.; Milford, K.M.; Maximova, K.; Nykiforuk, C.I.; Raine, K.D. A Nutrition Report Card on food environments for children and youth: 5 years of experience from Canada. Public Health Nutr. 2020, 23, 2088–2099.