FEATURE ARTICLE

A Qualitative Study of Barriers to Medication-Taking Among People With Type 2 Diabetes Using the Theoretical Domains Framework

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OBJECTIVE | We aimed to better understand the challenges related to type 2 diabetes medication-taking through Theoretical Domains Framework (TDF)-guided interviews with people with type 2 diabetes with varying degrees of medication-taking.

METHODS | One-on-one qualitative interviews following a semistructured discussion guide informed by the TDF were conducted. Thirty people with type 2 diabetes in Canada were interviewed, with representation from across the country, of both sexes (47% female), of people with various diabetes durations (mean 12.9 ± 7.9 years), with different types of medication plans (n = 15 on polypharmacy), and with various medication-taking levels (n = 10 each for low-, medium-, and high-engagement groups).

RESULTS | Themes related to medication-taking from interviews mapped to 12 of the 14 TDF theme domains, with the exclusion of the knowledge and skills domains. The most prominent domains, as determined by high-frequency themes or themes for which people with low and high medication-taking had contrasting perspectives, were *1*) emotion; *2*) memory, attention, and decision processes; *3*) behavioral regulation; *4*) beliefs about consequences; *5*) goals; and *6*) environmental context and resources.

CONCLUSION | Through our interviews, several areas of focus emerged that may help efforts to increase medication-taking. To validate these findings, future quantitative research is warranted to help support people with type 2 diabetes in overcoming psychological and behavioral barriers to medication-taking.

Approximately 3.4 million Canadians were estimated to be living with diabetes in 2015, corresponding to 9.3% of the total Canadian population, and this figure is predicted to rise to 12.1% of the population by 2025 (1). Nine out of 10 people living with diabetes in Canada have type 2 diabetes (2).

The management of type 2 diabetes is multifaceted, and treatment guidelines recommend behavior change interventions focusing on healthy eating and increased physical activity, concurrent cardiorenal protective medications, and the initiation of glucose-lowering agents as needed (3). Low levels of medication-taking can contribute to unstable glucose levels (3) and has been associated with increased risk of type 2 diabetes–related complications, hospitalizations, and mortality (4,5). Unstable glycemic outcomes resulting from low medication-taking have also been associated with increases in health care resource utilization and costs (e.g., for outpatient care, emergency room visits, hospitalizations, and managing diabetes-related complications) (4). It is estimated that approximately half of Canadian adults with type 2 diabetes have unstable glucose levels (i.e., an A1C ≥7.0% [53 mmol/mol]) (6).

Medication-taking is defined as the extent to which people engage with their prescribed medication dosing plan (7). In its 2003 report on medication-taking, the World Health Organization stated that increasing medication-taking engagement may have a far greater impact on the health of the population than making changes to specific medical treatments (8). A systematic review on medication-taking for people with type 2 diabetes found engagement rates ranging from 36 to 93% for oral hypoglycemic agents and from 62 to 64% for insulin, with variations resulting, in part, from the variety of measurement methods used (9).

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Several reviews published in recent years have examined the body of literature on medication-taking in relation to people with type 2 diabetes and established many factors affecting medication-taking engagement, including age, race, complexity of dosing plans, safety and tolerability of medications, perceptions of risks and benefits of medications (including injection phobia and concerns about long-term use), costs and economic considerations, insulin use, health literacy, and patient-provider interactions (4,10–13). Previous efforts to increase medication-taking have focused on reducing treatment complexity through fixed-dose combination pills and less frequent dosing plans, identifying health beliefs regarding acceptance of medication, and behavioral habit formation regarding medication-taking behavior (4,13). In 2015, Sapkota et al. (14) published a systematic review exploring 52 studies that addressed engagement with blood glucose–lowering medications in people with type 2 diabetes. They found that no single type of intervention increased medication-taking consistently and that increments in improved engagement were achieved by most strategies in one or more of the outcomes assessed. Another 2015 review by Sapkota et al. (15) found that interventions addressing several factors contributing to low medication-taking were comparatively more effective in improving medication-taking and meeting glycemic targets in people with type 2 diabetes than interventions addressing single factors (educational, behavioral, or economic). Yet, it was also observed that educational strategies were the most common intervention type, followed by behavior change strategies (15). A review summarizing the challenges associated with diabetes self-management similarly identified targets of intervention across three domains: *1*) knowledge, beliefs, and related cognitive constructs; *2*) emotional distress and well-being; and *3*) behavioral skills and coping (16). As part of their conclusion, the authors accentuated the need for continued research on the psychosocial aspects of living with diabetes and, specifically, the context underlying self-management behaviors (16). More recently, a study interviewing people with type 2 diabetes in the United States identified some psychosocial factors that influence the way people take medications, including their belief in medicine, and emphasized the need to understand individuals' life experiences and behaviors to increase their engagement with medication-taking (17).

Identifying factors related to not taking medications through the use of behavior change theories and frameworks is imperative to develop credible scientific evidence and inform evidence-based interventions. The Theoretical Domains Framework (TDF) is a comprehensive and commonly used theory-informed approach to guide qualitative data collection to better understand barriers and facilitators to behavior change (18). The TDF summarizes 33 theories of behavior change in the 14 theoretical domains listed in Table 1. This framework has been applied in the design of different interview studies (e.g., to increase the understanding of medication-taking behaviors among patients and decision-making in health care professionals [19,20]). Taken together, research to date showcases that factors contributing to medication-taking are multifaceted and highlights a gap in understanding the behavioral influences of medication-taking, especially among people with type 2 diabetes, in Canada.

In this study, we aimed to *1*) identify barriers to medication-taking faced by people with type 2 diabetes and *2*) explore potential strategies to address these barriers. Particularly, we believed that using the TDF to guide the conduct and analysis of semi-structured one-on-one telephone interviews with people with type 2 diabetes in Canada would help to elucidate the situational context and behavioral influences that contribute to medication-taking.

Research Design and Methods

Participants

Thirty individuals were recruited for 45-minute one-on-one interviews. Participants were recruited from a general sample of Canadians who have previously consented to be contacted to complete interviews for research. These people were initially recruited through referrals, social media, advertising, and patient advocacy groups. To participate in this study, individuals were required to have been living with type 2 diabetes for at least 1 year (i.e., since 2020) and to be currently on medication(s) to manage their type 2 diabetes. Quota sampling was used to ensure that the distribution of individuals included representation from various geographical regions in Canada, different medication types, and different levels of medication-taking.

Study Design

An interview discussion guide was developed, informed by the results from our previous scoping review (21), inputs from a national steering committee of clinical experts in diabetes, prior TDF medication-taking research (19), and the TDF (18) (Supplementary Material). The discussion guide included background questions on participants' history with type 2 diabetes and medications and questions exploring issues related to medication-taking for each of the 14 TDF domains. One-on-one, 45-minute telephone interviews were conducted from 8 July to 12 August 2021 in English or French by one of three interviewers. After receiving consent from participants, the interviews were digitally recorded,

TABLE 1 TDF Domains and Definitions (18)

Domain	Definition
Knowledge	An awareness of the existence of something
Skills	An ability or proficiency acquired through practice
Social/professional role and identity	A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting
Beliefs about capabilities	Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use
Optimism	The confidence that things will happen for the best or that desired goals will be attained
Beliefs about consequences	Acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus
Intentions	A conscious decision to perform a behavior or a resolve to act in a certain way
Goals	Mental representations of outcomes or end states that an individual wants to achieve
Memory, attention, and decision processes	The ability to retain information, focus selectively on aspects of the environment, and choose between two or more alternatives
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors
Emotion	A complex reaction pattern involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event
Behavioral regulation	Anything aimed at managing or changing objectively observed or measured actions

and themes (barriers) were identified for analysis. Participants were classified by sex, geographical region (Atlantic Provinces, Quebec, Ontario, or Western Provinces), years since type 2 diabetes diagnosis, types of medication(s) (metformin only, oral medications other than or in addition to metformin, insulin with or without metformin or other oral medications, or noninsulin injectable medications with or without metformin, other oral medications, or insulin), and levels of medication-taking (low, medium, or high).

Levels of medication-taking were determined based on answers to the Morisky, Green, Levine Medication Adherence Questionnaire (MGL-MAQ) (22). The MGL-MAQ is a concise, reliable, and validated self-reported scale to measure medication-taking behaviors in people with chronic diseases (23–25). This four-item scale includes yes/no questions, which are framed in reverse wording to overcome yes-saying bias. These items are *1*) Do you ever forget to take your medicine? *2*) Are you careless at times about taking your medicine? *3*) When you feel better, do you sometimes stop taking your medicine? and *4*) Sometimes if you feel worse when you take the medicine, do you stop taking it? Individuals who answered "No" to all questions were considered to have high engagement, those who answered "Yes" to one or two questions were considered to have medium engagement, and those who answered "Yes" to three or four questions were considered to have low engagement.

Analysis

An inductive approach was used to analyze the qualitative data collected from the interviews (18). Transcripts from all interviews were reviewed and condensed into brief summaries and further summarized into overarching belief statements (i.e., themes) by two reviewers (G.N. and Andrean Bunko of IQVIA Solutions Canada, Inc.) (26). The themes were then mapped to the best fitting of the 14 TDF domains listed in Table 1 by a single reviewer (G.N.). The mapping of themes into domains was interrogated and confirmed by a second reviewer (Andrean Bunko) (18) and subsequently reviewed by all authors. Domains were considered relevant if they had a high frequency (i.e., including several belief statements mentioned by multiple respondents) or included belief statements that contrasted between respondents who were considered high versus low engagement.

Results

Participant Characteristics

The demographic characteristics of the 30 people with type 2 diabetes interviewed for this study are presented in Table 2. Of the included individuals, 14 (47%) were female, with the largest proportion from Ontario (43%) and smallest proportion from the Atlantic Provinces (7%). The average time since diagnosis of type 2 diabetes for all individuals was 12.9 ± 7.9 years (range 1–30 years), and half (50%) of the individuals

reported currently taking more than one medication to manage their type 2 diabetes. Among all participants, 9 (30%) were taking metformin only, 9 (30%) were taking oral medication(s) other than or in addition to metformin, 3 (10%) were taking insulin with or without metformin or another oral medications, and 9 (30%) were taking a noninsulin injectable medication with or without metformin, other oral medication(s), or insulin. In all, 10 individuals each were classified into the low, medium, and high medication-taking categories. Table 2 presents the participant characteristics stratified by level of medication-taking.

Key Medication-Taking Themes by Theme Domain

Forty-two themes were identified and mapped to 12 of the 14 theme domains, with the knowledge and skills domains being the exceptions. The most prominent domains, as determined by high-frequency themes or themes for which people with low and high medication-taking had contrasting perspectives were emotion (2 themes); memory, attention, and decision processes (6 themes); behavioral regulation (5 themes); beliefs about consequences (8 themes); goals (3 themes); and environmental context and resources (4 themes). The key themes from the most prominent domains are discussed below, along with illustrative quotes captured during the interviews. A list of all of the identified themes is provided in Supplementary Table S1.

Primary themes by theme domain

Emotion

Two identified themes mapped to the emotion domain and illustrate a contrast in mindset between individuals who reported low versus high medication-taking engagement. People with type 2 diabetes who reported low engagement described feeling overwhelmed by their medication plans and diabetes self-management (Supplementary Table S1, theme 13.1).

> *"Because I take so many medications—at times, I just get frustrated with it—that I'm so ill all the time and I get an attitude like, 'Oh, well. Who cares? I'm going to do what I want, eat what I want. Sort of like a lack of total awareness of what happens when I don't take the medicine. I'm just in a mood that I don't care . . . . I am very tired of taking loads of pills every day after many years."* (low engagement)

Similarly, it was found that people with type 2 diabetes who reported low engagement often associated taking medication and living with diabetes with negative emotions (e.g., feelings of annoyance, frustration, shame, and regret), which contrasted with those reporting higher engagement, who spoke about taking their medication with little emotional connotation, but rather as something that just needed to be done (Supplementary Table S1, theme 13.2).

> *"The fact that I have to take it at all—no, doesn't make me feel good at all—makes me feel like a total failure. Diabetes was pretty much my own fault because of the huge weight gain I had when I was a kid. . . . but it's my own fault."* (low engagement)

> *"For me, it is about accountability and being more responsible in my day-to-day life for how I'm feeling and how I'm doing. Medication is a huge part of that. Being responsible and organized and taking the medication is definitely a part of who I am now. It's a normal, everyday occurrence, but it's something I have to do."* (high engagement)

Memory, attention, and decision processes

Themes that mapped to the memory, attention, and decision processes domain were prominent in the interviews, with contrasting accounts from people with low medication-taking compared with their medium- or high-engagement counterparts. For example, those who reported low engagement stated that they often forget or do not take their medication with them when leaving home for errands or social events or when traveling for longer periods of time, an issue not raised by individuals who reported high engagement (Supplementary Table S1, theme 10.1).

> *"I would typically travel every 6 months . . . and, absolutely, sometimes I will forget to take the medication with me. Or, just because you're traveling—you're outside with family and friends—you're not able to stick to your regimen. You forget it."* (low engagement)

> *"All of my medications are very stable and portable, so whenever I have traveled, it's easy to take everything with me."* (high engagement)

Participants reporting low engagement also often stated that they choose to skip doses rather than delay them when they were running late or had conflicting commitments (Supplementary Table S1, theme 10.2).

> *"If work is too busy, I tend to skip one of my doses. Usually there will be social events with friends or long trips or a busy work schedule—they are the activities that interfere with my medication . . . . I skip the doses."* (low engagement)

> *"I babysit my granddaughter, and she takes up a lot of my time. I forget for a while, but I always take it after."* (high engagement)

TABLE 2 Demographics of Study Participants

Characteristic	Total (N = 30)	Low Engagement (n = 10)	Medium Engagement (n = 10)	High Engagement (n = 10)
Female sex	14 (47)	5 (50)	3 (30)	6 (60)
Geographic region				
Ontario	13 (43)	5 (50)	5 (50)	3 (30)
Quebec	8 (27)	3 (30)	1 (10)	4 (40)
Western Provinces	7 (23)	2 (20)	2 (20)	3 (30)
Atlantic Provinces	2 (7)	0 (0)	2 (20)	0 (0)
Years since type 2 diabetes diagnosis, mean ± SD (range)	12.9 ± 7.9 (1–30)	9.2 ± 7.2 (1–22)	11.3 ± 7.4 (2–21)	18.1 ± 6.9 (5–30)
Takes more than one diabetes medication	15 (50)	4 (40)	5 (50)	6 (60)
Medications				
Metformin only	9 (30)	4 (40)	3 (30)	2 (20)
Oral medication(s) other than or in addition to metformin	9 (30)	3 (30)	3 (30)	3 (30)
Insulin with or without metformin or other oral medication(s)	3 (10)	0 (0)	2 (20)	1 (10)
Noninsulin injectable with or without metformin or other oral medication(s) or insulin	9 (30)	3 (30)	2 (20)	4 (40)

Data are n (%) except where noted.

Finally, there was a difference noted between the way participants reporting low or high engagement talked about taking medication as a priority. Those reporting low engagement more often believed that their diabetes could be managed by diet and/or exercise alone (Supplementary Table S1, theme 10.4).

> *"The most important is eating healthy because even if you don't exercise and you don't take your medication, if you're eating healthy, you're still going to be able to control your sugar levels."* (low engagement)

Additionally, people reporting low engagement often discussed forgetting about their medication, including forgetting to take medication at all and forgetting which medications they have already taken (Supplementary Table S1, theme 10.5).

> *"Sometimes, I just wake up the next day and go, 'Oh, I didn't take the meds last night, did I?'"* (low engagement)

Behavioral regulation

Five themes were identified in the behavioral regulation domain, highlighting that people with type 2 diabetes and low reported engagement may not have integrated taking their medication into their daily schedules or did not have an established routine. This was in contrast to people with higher levels of medication-taking, who commonly had an established routine for taking their medications (Supplementary Table S1, theme 14.1).

> *"I made everything habit. Once it's habit, it becomes automatic—you just do it."* (medium engagement)

> *"I take it in the morning and in the evening—it's routine. I do go to bed every evening, so I know that I have to take my medication. And in the morning, when I wake up, I take the other medications."* (high engagement)

Similarly, participants reporting low engagement less often mentioned using resources such as pill boxes and alarms to stay organized and remind themselves to take their medication. Even when resources were available, these participants did not use them as consistently as their high-engagement counterparts (Supplementary Table S1, theme 14.2).

> *"I could set alarms on my phone, but I don't. I don't use anything, no."* (low engagement)

> *"[I have] notifications on the phone, blister packs, and . . . Post-It notes and having my family around me, who ask, 'Did you remember to take this? Did you remember to do that?'"* (high engagement)

Finally, it was also noted that disruptions to established daily routines often made it easier to miss taking medications as recommended (Supplementary Table S1, theme 14.5).

> *"Meeting with friends, or any kind of social events, or if I go on long trips—these are activities that are interfering with my medications."* (low engagement)

> *"It's a timing thing. It [medication] causes gurgling and gas and all kinds of nastiness, so if I'm going to a restaurant, I would've thought 'I'm going to wait until I'm done with the restaurant to take the pill' . . . steering around my*

schedule a little bit. I try not to miss, but if I miss, I wait until the next time. I don't double dose." (low engagement)

"In the morning, if my routine is broken, sometimes I can forget, but it's rare. Almost like a step-by-step thing in the morning. So, I do A, B, C . . . D is taking the pills." (high engagement)

Beliefs about consequences

Eight themes were identified in the beliefs about consequences domain—the greatest number of themes across the TDF domains. Within these themes, people reporting low engagement were more often unaware of the consequences of not taking their medication or were less likely to take medication as prescribed because of perceived or actual side effects that disrupt their lifestyles and schedules (Supplementary Table S1, theme 6.2).

"Medications come with their own side effects, and they ruin other things, like your liver and kidney and whatever." (low engagement)

"I was told by the doctor to take [my medication] 3 times a day. At first, I really wanted to follow those instructions from the doctor, but then I would get side effects, like I would have diarrhea and metallic taste . . .. It's not practical. It's very uncomfortable . . . . I would only take the medicine if I'm staying at home . . . but if I'm working or doing errands outside . . . I stop taking it." (low engagement)

Goals

Three themes from our interviews were mapped to the goals domain. Of these, it was noted that some participants reporting low engagement wanted to lower their doses and minimize the number of medications they take or eliminate the need for medication altogether (Supplementary Table S1, theme 9.2).

"I wish there was just one magic pill or one magic injection that will take care of all of it." (low engagement)

Another theme that was commonly discussed was that some participants were not motivated to take medication by setting and focusing on long-term goals. Those reporting high engagement often talked about having more resolute long-term goals that involved loved ones (Supplementary Table S1, theme 9.3).

"This medication is helping me. I'm not going to stop taking it. I'm a much happier person. I'm a much better person to my family and everyone as long as I take my medication." (high engagement)

Environmental context and resources

Four identified themes mapped to the environmental context and resources domain, including some people discussing that they are affected by high costs of and limited insurance coverage for diabetes care, including medications and glucose monitoring, and these problems negatively affect medication-taking (Supplementary Table S1, theme 11.1).

"The cost is getting to be huge for diabetics. Right now, when you haven't been working for a year . . . someone on a fixed income . . . and it's been going up in price—let's say an average of $170–180 every 2 months for your supplies. And that's not including your test strips. That is a lot of money." (medium engagement)

Furthermore, participants who reported low engagement suggested that they may be influenced by unreliable sources of information that negatively affect their medication-taking (Supplementary Table S1, theme 11.3).

"Initially, I was scared of the drug because I have read [online] that metformin usually causes Alzheimer's, but later on, when I kept searching, I said, 'Okay, it's safe.' But still, I'm having my concerns about how metformin side effects are going to be in the long term. I was concerned taking it long term." (low engagement)

Discussion

Through qualitative interviews, we identified themes and barriers affecting medication-taking among people with type 2 diabetes in Canada using the TDF, with six prominent theme domains identified. These domains were *1*) emotion; *2*) memory, attention, and decision processes; *3*) behavioral regulation; *4*) beliefs about consequences; *5*) goals; and *6*) environmental context and resources. To our knowledge, this is the first study to apply the TDF to qualitative one-on-one interviews with people with type 2 diabetes to provide a greater understanding of the situational context and drivers of medication-taking behavior.

The results from our study extend those of prior studies in several ways, providing further context for the ways in which complex dosing plans, tolerability of medications, and perceptions of risks and benefits of medications (13) contribute to engagement. These findings also present additional context for how both unintentional nonengagement behaviors, such as forgetfulness and beliefs about the need for medication, and intentional nonengagement behaviors contribute to taking medication as recommended (27,28).

Polonsky and Henry (4) emphasized that innovative strategies to improve the attitudes of people with type 2 diabetes toward medication or encourage habit formation regarding medication-taking may help increase engagement. Our study used the TDF to identify specific intentional and unintentional behavioral influences on medication nonengagement that were common among people with low medication-taking. This information was further enriched by contrasting the attitudes and behaviors of people with higher medication-taking to derive recommended areas of change. By leveraging findings from our approach, strategies to increase medication-taking can be tailored to target specific behavioral influences and contextual challenges.

Our results can be applied to the development and application of effective interventions to increase medication-taking, and these should take into account the broader TDF theme domains we identified, as well as target specific themes within each domain (29). For example, people with type 2 diabetes with low engagement experience emotional challenges associated with being overwhelmed by living with diabetes and needing to take medication. Therefore, diabetes self-management support interventions might benefit from incorporating emotion management strategies for people who struggle with diabetes and treatment acceptance (Supplementary Table S1, theme 13.1). Diabetes self-management education that provides concise and reliable diabetes and medication knowledge might mitigate issues associated with individuals' past experiences of having unreliable information sources (Supplementary Table S1, theme 11.3) and also address feelings about medication-taking (Supplementary Table S1, theme 6.2). The individuals expressed a desire for information that is simple and easily accessible, supports setting expectations regarding side effects, and increases their understanding of the long-term benefits of treatment. Furthermore, we suggest that improving access to resources such as diabetes clinics, pharmacists, and support groups where people with type 2 diabetes can ask questions, receive coaching, and get essential education and training would be useful. These strategies would provide an opportunity to reframe negative feelings about diabetes and medications (Supplementary Table S1, theme 13.2). These approaches could also specifically target identified themes such as the importance of long-term goal setting (Supplementary Table S1, theme 9.3) and understanding the role of medications in type 2 diabetes treatment and the progressive nature of the disease (i.e., that it usually requires long-term medication use) (Supplementary Table S1, themes 9.2 and 10.3).

Likewise, practical support that facilitates medication-taking and increases accessibility may help to increase engagement. It was apparent in this study that disruptions to routines affected individuals who reported low engagement more than those with medium or high engagement, resulting in unintentionally or intentionally forgetting, skipping, or delaying medication doses (Supplementary Table S1, themes 10.1, 10.2, and 14.5). This finding highlights an important consideration when selecting medication plans, which should incorporate individuals' convenience and lifestyle considerations to encourage engagement.

Our findings also highlight the importance of people with type 2 diabetes establishing a medication-taking routine. A number of participants reporting low engagement did not use reminders, whereas those with high engagement had a clear and defined process, including organization resources such as pill boxes and pharmacy-prepared personalized blister packs and tracking resources such as phone alarms, calendars, and diaries (Supplementary Table S1, theme 14.2). Thus, encouraging or enabling the use of such tools among people with type 2 diabetes may increase engagement, although success in using these tools may be more a result of individuals' motivations and organizational skills rather than the mere availability of the tools.

There is also a role for pharmacist teams to identify people with or at risk for low engagement and to support these individuals through actions such as sending refill reminders, dispensing medication in personalized blister packs, and accommodating emergency medication needs, in addition to having conversations with and supporting people with type 2 diabetes in individualized appointments.

Finally, financial barriers such as high costs of medications and glucose monitoring supplies (Supplementary Table S1, theme 11.1) can be diminished through health system changes (specifically, covering diabetes-related care products and medications) and through support programs.

Limitations

There are limitations to our study that should be considered for proper interpretation of the results. First, although quota sampling was conducted to ensure diversity among the participants, little diversity was reflected in recruited participants. Therefore, our participants may not have been representative of all people with type 2 diabetes in Canada. Second, social desirability bias, in which respondents tend to provide answers that overreport desirable and underreport less desirable attributes is a known concern with interviews. However, this problem was mitigated by our comprehensive discussion guide, which approached the topic of medication-taking from many perspectives, as well as by contrasting the responses of people with lower and higher medication-taking engagement. Third, although generating data using the TDF

has been shown to be a comprehensive and inclusive approach to exploratory research, it is still a descriptive framework rather than a theory (30). The results generated do not specify relationships between the domains and do not generate testable hypotheses (31). Finally, we recognize that qualitative interviews about behavioral influences represent the perceptions of the individuals interviewed and may not reflect the actual causes of their behaviors or be generalizable to broader populations (30).

Conclusion

Our study identified behavioral influences contributing to lower medication-taking engagement, highlighting key areas for change among a small group of people with type 2 diabetes. Future research is warranted to validate these findings within a larger sample and to explore the suitability of various intervention and implementation options to improve medication-taking (32). Additionally, the results of this study can inform the development of medical education and training programs for health care providers supporting people with type 2 diabetes in Canada.

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AUTHOR CONTRIBUTIONS

All authors reviewed the TDF mapping results and participated in the interpretation of results, reviewed and revised the manuscript, and approved the final manuscript. G.N. conducted the interviews, coded the themes, and conducted the theme domain mapping. G.N. is the guarantor of this work and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

PRIOR PRESENTATION

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