

**RESEARCH: EDUCATIONAL AND
PSYCHOLOGICAL ASPECTS**

A theoretical model of contraceptive decision-making and behaviour in diabetes: A qualitative application of the Health Belief Model

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Abstract

Aim: People with diabetes have contraceptive needs that have been inadequately addressed. The aim of this qualitative study was to develop a theoretical model that reflects contraceptive decision-making and behaviour in the setting of diabetes mellitus.

Methods: We conducted semi-structured, qualitative interviews of 17 women with type 1 or type 2 diabetes from Michigan, USA. Participants were recruited from a diabetes registry and local clinics. We adapted domains from the Health Belief Model (HBM) and applied reproductive justice principles to inform the qualitative data collection and analysis. Using an iterative coding template, we advanced from descriptive to theoretical codes, compared codes across characteristics of interest (e.g. diabetes type), and synthesized the theoretical codes and their relationships in an explanatory model.

Results: The final model included the following constructs and themes: *perceived barriers and benefits to contraceptive use* (effects on blood sugar, risk of diabetes-related complications, improved quality of life); *perceived seriousness of pregnancy* (harm to self, harm to foetus or baby); *perceived susceptibility to pregnancy risks* (diabetes is a ‘high risk’ state); *external cues to action* (one-size-fits-all/anxiety-provoking counselling vs. personalized/trust-based counselling); *internal cues to action* (self-perceived ‘sickness’); *self-efficacy* (reproductive self-efficacy, contraceptive self-efficacy); and *modifying factors* (perceptions of biased counselling based upon one’s age, race or severity of disease).

Conclusions: This novel adaptation of the HBM highlights the need for condition-specific and person-centred contraceptive counselling for those with diabetes.

1 | INTRODUCTION

In the United States, 3.8% of reproductive-aged women¹ have diabetes mellitus. Diabetes and high glycaemic levels increase the risk of pregnancy-related complications,

¹We refer to ‘women’ when citing other studies. Otherwise, we use the gender-neutral terms ‘person’ or ‘people’ to include those who identify as transgender or non-binary.

including preeclampsia, caesarean delivery, macrosomia, stillbirth¹ and maternal deaths.² People with diabetes often use medications that can cause birth defects, such as angiotensin converting enzyme inhibitors³ or statins.⁴ Those who do not desire pregnancy or want to delay pregnancy and optimize their pre-pregnancy health should receive contraceptive counselling.

Despite increased attention to pre-pregnancy care for people with diabetes,^{5–8} there has been less focus on their contraceptive decision-making and behaviour. Recent literature, primarily quantitative studies,^{9,10} raises concerns that people with type 1 or type 2 diabetes may not be routinely counselled about contraception or informed about the full range of contraceptive options.^{9–13} For example, women with diabetes have a higher odds of not using any contraception than women with normoglycaemia⁹ (OR 1.9, 95% CI 1.25–2.87). Among women with diabetes who do use contraception, they are less likely to use the intrauterine device (IUD) and more likely to undergo tubal sterilization than their peers without diabetes.¹¹

What remains relatively unexplored are the psychosocial and cognitive factors that drive such contraceptive decisions. There is also a need to evaluate these factors within the context of behavioural health theory. Contraceptive interventions are more likely to be effective if they are informed by the theoretical underpinnings of modifiable beliefs and behaviours.¹⁴ In a 2012 concept paper, Hall proposed that the Health Belief Model (HBM), an extensively tested social-cognitive theory,¹⁵ can guide understanding of contraceptive behaviour among adults. She posited that contraceptive use is predicated on sufficient motivation to prevent pregnancy.¹⁶ Factors that drive this motivation include perceived threat of pregnancy, perceived barriers and benefits to contraception, ‘cues’ that drive these perceptions and personal characteristics (e.g. age, race/ethnicity).¹⁶ To date, no prior investigators have operationalized these constructs at the intersection of contraception and diabetes. To address this gap, we conducted this qualitative study to adapt constructs of the HBM and develop a theoretical model regarding contraceptive decisions and behaviour in the setting of diabetes.

2 | METHODS

This study was part of a larger mixed methods study to assess the contraceptive experiences of people with chronic medical conditions.¹⁷ Eligible participants included those who were assigned female sex at birth, aged 18–50 years, able to speak English, premenopausal and diagnosed with diabetes. Pregnant individuals were excluded. We recruited participants from a diabetes registry and local hospital- and community-based clinics (primary care, nephrology and endocrinology) in southeast Michigan, USA. Because this study was focused on theory generation rather than hypothesis testing, we sought to include people with a broad range of diabetes and health experiences. We conducted maximum variation sampling, described by Palinkas and colleagues as a method to ‘identify and expand the range of differences and variations’ and ‘important shared patterns that cut across cases’.¹⁸ Thus, we purposefully sampled approximately equal numbers of those with type 1 diabetes and type 2 diabetes, as well as those who use and do not use insulin.¹⁹ We sought

Novelty Statement

- Diabetes has become increasingly common among reproductive-aged women, and their contraceptive needs have been inadequately addressed.
- The unique contribution of this qualitative study is a novel adaptation of the Health Belief Model to contraceptive decision-making and behaviour in the setting of diabetes.
- We identified the need for person-centred counselling that promotes the contraceptive autonomy of individuals with type 1 diabetes and type 2 diabetes.
- These findings can inform the development of contraceptive interventions that reflect condition-specific concerns and priorities of people with diabetes.

to oversample racial and ethnic minorities and participants across a range of self-reported health scores per the National Health and Nutrition Examination Survey (NHANES)²⁰ item ‘Would you say your health is excellent, very good, good, fair, or poor?’²¹ The study was approved by the University of Michigan Institutional Review Board (HUM00128060). We conducted interviews from April 2018 to January 2020.

Trained research assistants (E.J. and K.B.) conducted semi-structured, qualitative interviews of eligible and consented participants.²² Interviews lasted about 30 min to 1 h and were conducted face-to-face in a private room at their healthcare professional’s (HCP) office or other setting (e.g. library). Two interviews were conducted by phone to accommodate participants’ scheduling constraints. The interviews were audio-recorded with the participant’s permission and professionally transcribed with removal of personal identifiers. The interview transcripts were managed with MAXQDA software (version 12.3.6).²³ Participants received \$25 for completion of the interview.

The qualitative interview guide had open-ended questions to elicit experiences regarding diabetes, pregnancy and contraception. In our analysis, we sought to explore the HBM domains as operationalized by Hall¹⁶: (1) *cost–benefit analysis* (perceived benefits and barriers related to contraceptive use); (2) *perceived threat* (perceived susceptibility to pregnancy risks and perceived seriousness of pregnancy risks); (3) *cues to action* (internal or external stimuli that trigger perceptions and facilitate actions to mitigate threats); (4) *modifying and enabling factors* (personal factors that alter one’s experience of the other constructs, e.g. race/ethnicity). In addition, we explored *self-efficacy*, a construct that has been included in more recent versions of the HBM, which we operationalized as an individual’s confidence in carrying out a reproductive health behaviour.⁵

Two team members conducted the qualitative analysis (E.J. and J.P.W.) using an iterative template coding method as described by Crabtree and Miller.²⁴ We independently read the first few transcripts and assigned codes to text passages that captured underlying concepts.²⁵ We created a final coding template and applied codes to the remainder of the transcripts. We then examined our codes in relation to the HBM domains and considered how each code contributed to our understanding of each domain. Using a matrix worksheet in Excel (Version 16.36), we compared and contrasted codes to explore patterns of experiences across diabetes type (type 1 vs. type 2), insulin treatment, self-reported health and race/ethnicity. To challenge our underlying assumptions, we actively sought alternative explanations and periodically reviewed the emerging analysis with the rest of the research team (M.D., A.O., K.B. and M.V.S.). We stopped interviews once theoretical efficiency was achieved,²⁶ the point at which we saturated understanding of the theoretical domains. In the final analytic phase, we synthesized the domains, themes and their relationships in a graphic model.

3 | RESULTS

There were 17 participants, 10 (59%) with type 1 diabetes and 7 (41%) with type 2 diabetes (Table 1). The largest ethnic/racial group was non-Hispanic Black ($n = 7$), followed by non-Hispanic White ($n = 6$), Latina/Hispanic ($n = 3$) and other ($n = 1$). Tables 2–4 summarize the HBM domains and related qualitative themes. Illustrative quotations from participants are provided throughout the manuscript and tables; all participants are represented at least once. Figure 1 depicts the fully conceptualized theoretical model.

3.1 | Cost–benefit analysis: Perceived barriers and benefits to contraceptive use (Table 2)

Participants identified diabetes-specific barriers and benefits to contraception, and how they weighed these factors when selecting a contraceptive method (referred to hereinafter as ‘method’). A prominent concern was that contraception, often referred to simply as ‘hormones’, could affect glucose levels. Participants were unsure about the impact of hormones. Some vaguely recalled warnings from their HCPs (‘I’ve been told that [birth control] can affect blood sugar, but they never really said exactly what kind’, White, parous, type 1 diabetes, 36–40 years). Participants generally prioritized glycaemic management over hormonal contraception use:

TABLE 1 Participant characteristics ($N = 17$)

Characteristic	<i>N</i>
Age	
18–25	2
26–30	4
31–35	2
36–40	4
>40	5
Race/Ethnicity	
Non-Hispanic White	6
Non-Hispanic Black	7
Hispanic	3
Asian	1
Education	
High school/GED	1
Some college	8
College degree or higher	8
Insurance ^a	
Private	8
Medicaid	8
Medicare	2
Other	1
Self-reported health status	
Poor	1
Fair	7
Good	8
Very Good	1
Parity	
Nulliparous	7
Prior birth control ^a	
Oestradiol/progestin-containing contraception (ring, patch, pills)	13
Progestin shot, <i>Depo-Provera</i> [®]	8
Long-acting reversible contraception (IUD, Implant)	8
Female sterilization	3
Current birth control ^a	
Oestradiol/progestin-containing contraception (ring, patch, pills)	1
Progestin shot, <i>Depo-Provera</i> [®]	2
Long-acting reversible contraception (IUD, Implant)	6
Female sterilization	3
Male condoms	6
Withdrawal	2
Diabetes mellitus status	
Insulin-dependent type 1 diabetes	10
Not insulin treated, type 2 diabetes	4
Insulin treated, type 2 diabetes	3

Abbreviations: DM, diabetes mellitus, GED, General Educational Development test; IUD, intrauterine device.

^aMay not add up to 100% because these categories are not mutually exclusive.

TABLE 2 Cost–benefit analysis: perceived barriers and benefits of contraceptive use

Themes and subthemes	Quotations
'Hormones' may affect blood sugar	
	And I don't know if that was because I had an extra hormone, rummaging through my body or whatnot. But I noticed that my blood sugars were tremendously high. (Black, nulliparous, T1DM, 20–25 years)
Daily oral contraceptive pills	
Advantage	I chose the pill because I thought it might be a little easier for me because I'm already takin' meds. (Black, parous, T2DM, >40 years)
Disadvantage	I already take a lot of medication. And it would be another thing to have to remember. (Hispanic, white, nulliparous, T1DM, 26–30 years)
Birth control and comorbidities	
Worsen comorbidities or diabetes-related complications	I've actually done a lot a research into that, 'cause I, I didn't wanna take a birth control that would make my weight increase. I think that would really bother me. And it would impact my diabetes too. (Hispanic, white, nulliparous, T1DM, 26–30 years) I'm a little bit concerned about getting on a birth control, just because of like the stroke risk, and given the fact that I have high cholesterol. Combined with diabetes, the stroke risk is like a concern of mine. (White, nulliparous, T1DM, 26–30 years)
Improve co-conditions or quality of life	The IUD came after the tubal ligation. Not as a birth control method, but because I was having heavy bleeding with my periods. My iron level was really, really low. So that's when my doctor did the IUD. (Hispanic, white, parous, T1DM, >40 years) With the IUD I don't have to worry about being consistent because I was still workin' on bein' consistent with my insulin. I didn't want to be distracted (Black, nulliparous, T1DM, 20–25 years)

TABLE 3 Perceived threat of pregnancy: perceived seriousness and perceived susceptibility

Themes and subthemes	Quotations
Perceived seriousness	
<i>Harm to pregnancy, foetus, baby</i>	
(macrosomia, foetal deformities)	My mom told me that she didn't even think I should get pregnant because of my diabetes. I think she just thought, what if this baby comes out and is deformed, or has something wrong? Are you gonna be okay with that? (White, nulliparous, T1DM, 26–30 years)
<i>Harm to self</i>	
(stroke, premature labour, preeclampsia, C-section, delayed healing)	My physical well-being is not where I would want it to be when I'm pregnant. I don't wanna cause a high risk when I know better, and I know that my body is not ready for that. Mainly 'cause of the diabetes and the blood pressure. (Black, nulliparous, T2DM, 26–30 years)
Perceived susceptibility	
<i>'I am high risk'</i>	
	Since I have diabetes and I had my stroke in the past, it would be at high risk, just because you have to watch your sugars, you have to watch really everything.... I just know that since I had diabetes I was a high risk. (Asian, parous, T1DM, 31–35 years)

When I was using the birth control pill, it was causing complications with my diabetes. I mean, diabetes is hard enough to manage on its own, to not have to try and juggle that plus a contraceptive. So, then we just went to using condoms instead.

(Hispanic, White, parous, type 1 diabetes, >40 years)

Participants had different opinions about the pros and cons of oral contraceptive pills. Some felt that taking oral

contraceptive pills would be easy because they already take daily diabetes medications. Others felt that adding another pill would be burdensome:

I didn't wanna have to remember to take the pill at the same time, all the time. Because at that time, I wasn't on a lot of meds, and I didn't wanna have to remember to take it the same time.

(White, nulliparous, type 2 diabetes, 36–40 years)

TABLE 4 Cues to action, modifying factors, and self-efficacy

Themes and subthemes	Quotations
External stimuli	
Absence of provider counselling (Hispanic, white, nulliparous, T1DM, 26–30 years)	Just things that I've read and I've heard. But these things haven't come from my doctors.
Negative provider interactions	I kinda wish he never put it in my head. You know. It, it made me feel a little scared. And I remember him talkin' to me about it. So I'm thinkin' like let me do this. (Black, parous, T1DM, 36–40 years)
Positive provider interactions	He's nice. And, if I wanted pills he would probably just prescribe me pills without asking. Um, or whatever is best for me, without asking. So, I would just ask him (Black, nulliparous, T1DM, 20–25 years)
Stories and advice from others	Um, my ex's... last ex. Had the implant in her arm and she bled for like 6 months straight. But my sister has it and she says it's fine. But I don't know. (White, parous, T2DM, 36–40 years)
Internal stimuli	
Self-perceived 'sickness'	So... if I was healthy and didn't have any health issues, I would be excited. But because I'm so sick, that's why I'm unsure about it. I, right now is not the time, because of how sick I am. But if I was able to and was healthy, I would you know, be excited about it. (Hispanic, white, parous, T1DM, >40 years)
Self-efficacy	
Reproductive self-efficacy (‘You need to plan and prepare’ for pregnancy)	Basically, what I've been told is you can get pregnant if you have diabetes, but you need to plan your pregnancy. You should have a game plan going into it. You shouldn't just, oh oops, I accidentally had got pregnant. (White, nulliparous, T1DM, 26–30 years)
Contraceptive self-efficacy (confidence to advocate for one's contraceptive preferences)	I feel like it was the fastest, easiest way that I could control it. With any other birth control, like an implant, like somebody has to cut your arm open and put it in, and then it's in there, and then if you wanted to take it out, it's not like you could take it out yourself. (Black, parous, T2DM, >40 years)
Modifying factors	
Age	Well the people at the hospital were like ‘Are you sure?’ [about decision to undergo tubal ligation]. I'm like yeah, I'm sure. And I was only 23 at the time, that's why they were questioning it; ‘are you sure? are you sure?’ (Asian, parous, T1DM, 31–35 years)
Race	Because I've seen friends of, that are not the same colour as me, they've gone into situations like that, and, easily taken their birth control out. Didn't have to argue with them, they didn't have to, you know. They didn't get referred to family planning or anything like that, I felt like she felt like I was makin' a irresponsible decision [to request to have IUD removed]. (Black, nulliparous, T1DM, 20–25 years)

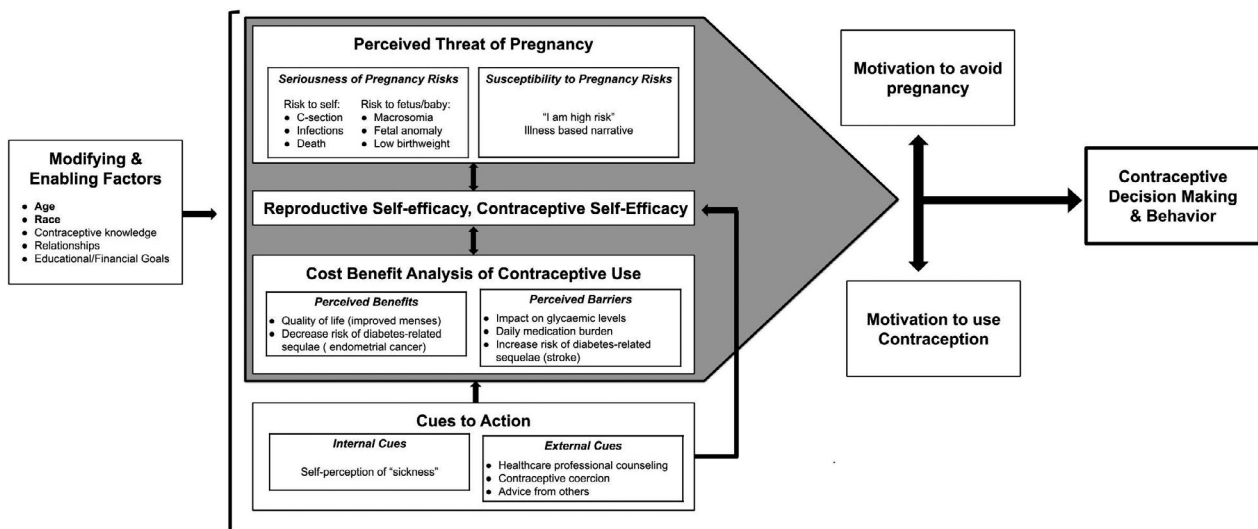


FIGURE 1 Theoretical model of contraceptive decision-making among women with diabetes

A significant concern among participants was that a method may exacerbate their co-morbidities or increase their risk of diabetes-related complications. Many worried about hormonal contraception causing weight gain, especially the injectable progestin (hereinafter referred to as 'the shot'). Weight gain could, in turn, worsen their diabetes ('[the shot] also made me gain a lot of weight. So then when I gained weight, that made my diabetes worse'. White, parous, type 1 diabetes, 36–40 years). Another fear was that placement of IUDs or the subdermal arm implant may increase the risk of infection ('bein' diabetic, anything you open up can become infected,' White, nulliparous, type 2 diabetes, 36–40 years).

Others acknowledged that some methods have non-contraceptive health benefits. This participant with polycystic ovarian syndrome described using oral contraceptive pills to lower her risk of endometrial cancer ('I started birth control because I was havin' issues with the cycle not stopping, and the OB/GYN especially was worried about causin' maybe uterine cancer (Black, parous, type 2 diabetes, >40 years').

This participant highlighted the 'no hassle' benefit of the IUD, which did not add to the stress of diabetes management ('I mean diabetes is hard enough to manage on its own, to not have to try and juggle that plus a contraceptive was important', Hispanic, White, parous, type 1 diabetes, >40 years).

3.2 | Perceived threat: Perceived seriousness and susceptibility related to pregnancy (Table 3)

3.2.1 | Perceived seriousness to self

Women who had never experienced childbirth spoke little about their perceived risks of pregnancy. Few had received education about this topic. Parous women had greater understanding of diabetes-related pregnancy risks, such as preeclampsia, premature labour and caesarean delivery. Those who had suffered serious pregnancy events and subsequently underwent tubal sterilization were strongly motivated by fears of problems in a subsequent pregnancy. This participant's childbirth was complicated by a stroke, premature delivery and preeclampsia:

After I had my son, I just felt like I think my health would be a little bit more important than having another child, and either the baby, or me, would lose its life, you know. So I just wanted my tubes tied.. I just wanted to be more proactive than, you know reactive.

(Asian, parous, type 1 diabetes, 31–35 years)

3.2.2 | Perceived seriousness to the foetus/baby

Participants articulated threats to the foetus and baby as distinct from threats to themselves. Most participants were able to identify macrosomia as a risk of gestational diabetes either from personal experience ('my daughter was huge...so I ended up being induced with her', Black, parous, type 2 diabetes, 31–35 years) or from knowledge gained elsewhere. Others worried about serious 'deformity' of the baby as a result of diabetes: 'I watched a talk show where this girl was pregnant with type one diabetes and she wasn't controlled, and her baby was not growing one of its limbs' (White, nulliparous, type 1 diabetes, 26–30 years).

3.2.3 | Perceived susceptibility: 'I am high risk'

The perception of 'being high risk' was common among participants, even among those who never had pregnancy complications or been told they are high risk by their HCPs. Some referred to 'high risk' as a generic label assigned to pregnant women with diabetes ('Basically the second I conceive I feel like I'm a high-risk pregnancy. I'm identified as such because of the diabetes', White, nulliparous, type 1 diabetes, 26–30 years).

3.3 | Cues to action: External and internal stimuli (Table 4)

3.3.1 | External stimuli

Absence of provider counselling

Most participants reported that they had not received contraceptive counselling during routine office visits. When HCPs did provide counselling, it strongly informed their contraceptive decisions. There were examples of positive and negative counselling interactions with HCPs.

Negative provider interactions (one-size-fits-all, anxiety-provoking)

Several participants described impersonal, 'one-size-fits-all' approaches to contraceptive counselling. This participant recalled being repeatedly admonished by her HCP to 'get on birth control' based upon assumptions about her sexual behaviour rather than her actual contraceptive needs:

...they automatically assume you're sexually active. And so they're like you need to get on birth control, and I'm like I'm not doin' that 'cause we're not active ...It was upsetting

because I already said no. ...They asked me so many times that I eventually, bef—like the year before we got married, I got on it [birth control]. But, um... which was a bad experience, so.

(Black, nulliparous, type 1 diabetes, 20–25 years)

Others described HCPs who catastrophized pregnancy, which triggered anxiety and distress. This participant recalls a ‘traumatic’ encounter with a diabetes nutritionist:

...she’s like on the verge of ‘you’re gonna die’. Cause my A1C’s weren’t good. And so she did say don’t get pregnant, which again, I was a teen, so wasn’t considering it anyway. Those are like the few times I cried. ‘Cause that traumatized me’.

(White, nulliparous, type 1 diabetes, 20–25 years)

Positive provider counselling (personalized, trust-based counselling)

There were examples of those who trusted their providers and would seek out their family planning advice. This participant spoke appreciatively about how her endocrinologist gave personalized advice that considered her current health, diabetes management and partner relationship:

Actually we just talked about this with my endocrinologist. I just got married last year, so he’s like if you’re planning for a baby, like now would be the time, like height of your health. Like you’ve been doin’ really well. He’s like you’re okay to have a baby now. And I’m just like a couple years ago that wasn’t even a thought. One, because, I wasn’t married, and two was ‘cause my health was terrible.

(Black, nulliparous, type 1 diabetes, 20–25 years)

Stories and advice from others

Family members and friends shared contraceptive stories that greatly influenced participants’ attitudes and decisions. Those who experienced side effects or complications they attributed to a method shared the most compelling anecdotes. Often, these narratives influenced participants to decide against a method:

‘Cause my best friend had it, and she had a lot of complications. And she told me, because they were gonna give me the IUD at one point in time. And because of all the complications and the pain that she was in, I chose not to, to get it.

(Hispanic, White, parous, type 1 diabetes, >40 years)

3.3.2 | Internal stimuli

Self-perceived ‘sickness’

Self-perceptions of illness shaped the strength of one’s motivations to avoid pregnancy. Women who identified as having poor health or who had previously struggled with poor health worried they would ‘not be in good shape to sustain a pregnancy’ (White, nulliparous, type 1 diabetes, 20–25 years). This participant rationalized pregnancy avoidance was necessary to protect herself and a potential baby due to the severity of her illness:

Along with the diabetes and the kidney disease, the chances would be high risk for the baby. I’m so sick I can’t, honestly I, I, if I was able to get pregnant, I shouldn’t be pregnant. Because, I can be so, really sick and so can the baby.

(Hispanic, White, parous, type 1 diabetes, >40 years)

This nulliparous participant felt that people with ‘too many health problems’ would not make suitable parents and may pass on genetic problems to their offspring. She cites this concern as a rationale for adopting children:

...certain humans wouldn’t be allowed to have kids because they’ve had too many health problems. I always thought about if I ever felt healthy enough to take care of a child, it would be one I would adopt, because I wouldn’t want to risk giving ‘em my health conditions.

(White, nulliparous, type 2 diabetes, asthma, CKD, >40 years)

3.4 | Self-efficacy (Table 4)

3.4.1 | Reproductive self-efficacy: ‘You need to plan and prepare’

Participants varied in their confidence regarding pre-pregnancy preparation and ability to maintain a healthy pregnancy. ‘Being prepared’ for pregnancy was a key strategy to mitigate risk. This participant advocated for battle-readiness attention to combat an evolving threat:

You have to be prepared for everything. You gonna have to modify because... day one week one, may not be the same as week 37 or 38 or 39 or 40 tryin’ to deliver. So, like I tell people, nowhere in the rulebook does it say you can’t cry, it just says you can’t quit. That’s, you have to be in control. ‘Cause I tell diabetes every day,

you will not beat me. We can fight all day, but you will not beat me.

(Black, parous, type 2 diabetes, >40 years)

Other participants expressed a sense of powerlessness to achieve the recommended glycaemic levels: ‘there’s a chance that you know my blood sugar might go crazy if I’m pregnant. And I don’t know if, that I can control it or not’ (White, nulliparous, type 1 diabetes, 26–30 years). Even for those with well controlled diabetes, the anticipation of maintaining ‘tight’ control throughout the pregnancy was anxiety-provoking:

I feel like if I got pregnant, my diabetes probably go out of control, I feel. I’m really afraid of that prospect. I think my control is pretty tight. I can’t imagine what else I need to do to keep it even tighter. That really stresses me out.

(Hispanic, White, nulliparous, type 1 diabetes, 26–30 years)

3.4.2 | Contraceptive self-efficacy

Self-efficacy also manifested in participants’ ability to advocate for their contraceptive preferences, including when to start or stop a method. One participant sought multiple providers to find one who agreed to remove her IUD (‘I literally went in there and said I don’t wanna talk to you about anything; I wanna have this taken out’, Black, nulliparous, type 1 diabetes, 20–25 years). This participant described an earlier pattern of contraceptive use that appeared to be driven by her providers’ recommendations rather than her preferences:

I started with, with Depo... And, then they moved me into the birth control pills... from there I wish they would of given me the IUD because I ended up with a lot a facial hair growth... I would have been a much happier person.

(White, parous, type 2 diabetes, 36–40 years)

3.5 | Modifying and enabling factors: Age and race (Table 4)

A reproductive justice theme emerged that highlighted the intersectional impact of age, race and disease severity on contraceptive counselling. Some reported that their tubal sterilization requests were denied because they were ‘too young’ at the time of the request. In contrast, this

participant does not recall substantive counselling prior to undergoing tubal ligation at 24 years old:

It was somethin’ I didn’t discuss with really nobody, I just did it. And that’s why I said it was just a rash decision I jumped into, and to this day regret it.

(Black, parous, type 1 diabetes, 36–40 years)

A Latina participant believed that her tubal sterilization request was approved – despite her young age – because of her ‘high risk’ state:

I was really sick with my third pregnancy. They knew I was high risk, and that why they let me do it. They said normally, if I was healthy, they wouldn’t do it at the age I was.

(Hispanic White, parous, type 1 diabetes, >40 years).

In the most extreme cases, participants felt coerced into using a method. One participant felt ‘80% pressured into using’ an IUD and believed this reflected her provider’s racist stereotypes about Black women:

I don’t make every issue a race issue. But a lot of times, even me workin’ in the clinic, and seein’ how some doctors respond to certain different races, and, um, genders as well, I felt disrespected. And I felt like she looked at me as if like you know, I’m just gonna be out here havin’ babies, and not bein’ able to take care... I felt slighted in a way.

(Black, nulliparous, type 1 diabetes, 20–25 years)

3.6 | Exploration of contraceptive experiences by subgroups

Compared to those with type 2 diabetes, those with type 1 diabetes provided more detailed descriptions of how diabetes affects their daily lives since youth, particularly the daily demands of glycaemic management. With respect to reproductive health and contraceptive experiences, we did not identify any salient thematic differences based upon diabetes type or insulin treatment, or self-reported health. Rather, we noted shared experiences across these groups, particularly a strong preference for tubal sterilization among those who had had difficult pregnancies and childbirth. Participants had mixed feelings about the IUD; some had positive experiences, while others had concerns about IUD complications based upon stories from friends and family members.

3.7 | Theoretical model of contraceptive decision-making and behaviour (Figure 1)

The final model proposes that the perceived threat of pregnancy – which applies to both the individual and the foetus/baby – and the perceived pros/cons of contraceptive use drive two behavioural antecedents: the motivation to avoid pregnancy and the motivation to use contraception. These motivations, in turn, drive contraceptive decisions and behaviour. External or internal cues to action magnify or mitigate fears of pregnancy complications or the pros/cons of contraception use. An illness-focused paradigm of diabetes ('I am high risk') or prior pregnancy complications can strongly motivate one to avoid pregnancy and select a highly effective reversible method or tubal sterilization. A positive cue to action is person-centred counselling that balances the relative benefits and risks of pregnancy and contraception in an individualized manner. Self-efficacy shapes one's perceived ability to meet the challenges of glycaemic management during pregnancy, which in turn influences one's motivation to pursue pregnancy or contraception. Self-efficacy also manifests as the confidence to advocate for one's reproductive or contraceptive priorities, even if the action goes against HCPs' recommendations. An individual's age, race or severity of diabetes may affect HCPs' counselling based upon conscious or unconscious biases. In the worst-case scenario, contraceptive coercion – such that a person feels pressured to use a particular method – can drive contraceptive decisions and behaviour.

4 | DISCUSSION

This study and the proposed theoretical model advances the fields of diabetes and reproductive health research in several ways. First, our application of the HBM construct of 'perceived threat' is novel. The traditional HBM model conceptualizes the condition of interest and the risks associated with it as outcomes to be avoided indefinitely.¹⁵ Our application of 'perceived threat' to pregnancy acknowledges that pregnancy can be a desired state. Second, our model operationalizes 'perceived threat' as a dual-pronged threat to self *and* to the foetus/baby.

Second, we oversampled for Black participants and brought their perspectives into sharper focus through a reproductive justice lens. Rooted in Black feminist scholarship, the premise of reproductive justice rests upon the right to choose if and when to become pregnant and parent.²⁷ Our findings underscore the need to challenge assumptions about pregnancy desires based upon one's ethnic/racial background, age and disease status. Participants wanted their HCPs to actively elicit their pregnancy desires and engage in shared decision-making based upon these values.²⁸

Our analysis identified knowledge gaps that should be targets for contraceptive education. Participants were generally not counselled about the bidirectional impact of diabetes on contraception and vice versa. Across diabetes type and self-reported health status, people reported strong fears of diabetes-related complications from hormonal contraception. Yet according to evidence-based guidelines, it is reasonable for people with uncomplicated diabetes to use oestrogen-containing contraceptives.²⁹ Those who have evidence or suspicion of end-organ disease should be advised to use oestrogen-free methods.²⁹ HCPs can dispel myths about IUDs and counsel that the majority of people with diabetes are candidates for these highly efficacious and reversible alternatives to permanent contraception.

We identified similarities rather than appreciable differences across people with a range of diabetes-related experiences (diabetes type, insulin treatment) and self-reported health status. Previous contraceptive and pregnancy experiences were more closely aligned with contraceptive decisions than diabetes-related experiences. This finding supports the application of this model for people along a continuum of diabetes-related experiences.

This study had limitations. All participants were from Michigan, USA. Most were insured and had some college education. Our findings may not reflect the experiences of those who are uninsured, less educated or live in other regions. While we did not identify themes that varied by diabetes type, it is possible we may have found differences in a larger sample.

This qualitative study generated new knowledge regarding perceptions and motivations relevant to contraceptive decisions in the setting of diabetes. This novel adaptation of the HBM, guided by reproductive justice principles, can inform future interventions designed to address diabetes-, age- and race/ethnicity-related reproductive health disparities.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Supplementary Material

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