



## RESEARCH ARTICLE

# Understanding mechanisms behind unwanted health behaviours in Nordic and South Asian women and how they affect their gestational diabetes follow-ups: A qualitative study

Archana Sharma<sup>1,2</sup>  | Kåre I. Birkeland<sup>2,3</sup> | Ingrid Nermoen<sup>1,2</sup> | Elisabeth Qvigstad<sup>2,3</sup> | Anh T. Tran<sup>4</sup>  | Hanne L. Gulseth<sup>5</sup> | Stina T. Sollid<sup>6</sup> | Cecilie Wium<sup>†</sup> | Cecilie Varsi<sup>7,8</sup>

<sup>1</sup>Department of Endocrinology, Akershus University Hospital, Lørenskog, Norway

<sup>2</sup>Institute of Clinical Medicine, University of Oslo, Oslo, Norway

<sup>3</sup>Department of Endocrinology, Morbid Obesity and Preventive Medicine, Oslo University Hospital, Oslo, Norway

<sup>4</sup>Institute of Health and Society, Department of General Practice, University of Oslo, Oslo, Norway

<sup>5</sup>Norwegian Institute of Public Health, Oslo, Norway

<sup>6</sup>Department of Medicine, Drammen Hospital, Vestre Viken Health Trust, Drammen, Norway

<sup>7</sup>Department of Digital Health Research, Oslo University Hospital, Oslo, Norway

<sup>8</sup>Faculty of Health and Social Sciences, University of South-Eastern Norway, Drammen, Norway

## Correspondence

Archana Sharma, Department of Endocrinology, University of Oslo, Campus Akershus University Hospital, 1478 Lørenskog, Norway.

Email: archana.sharma@ahus.no

## Funding information

This study was funded by the Research Council of Norway, grant number 273252. The funding body did not have any impact on the design of the study, the collection, the analysis, the interpretation of the data or in drafting the manuscript.

## Abstract

**Aims:** The type 2 diabetes risk following gestational diabetes mellitus (GDM) is high, particularly among South Asian women in Western countries. Our study aimed to advance the knowledge regarding the mechanisms behind suboptimal follow-up in the Nordic and South Asian women with previous GDM by comparing (1) their experiences, (2) health and disease perceptions and (3) barriers to and facilitators of health-promoting behaviours.

**Methods:** This qualitative study was conducted in three hospital outpatient clinics in Norway, comprising six focus group interviews with 28 women 1–3 years after a pregnancy with GDM. The participants were purposively sampled and grouped according to their ethnicity. The data were analysed using thematic analysis, and a theoretical approach was applied to support the analysis and discuss the study's findings.

**Results:** Five main themes were identified: lack of resilience, emotional distress, 'caught between a rock and a hard place', postpartum abandonment and insufficient guidance. The key determinants of the maintenance of unwanted health behaviours after GDM were consistent across the ethnic groups. Although the importance of a culturally sensitive approach was emphasised, it appeared secondary to the need for a more organised public healthcare during and after GDM.

**Conclusions:** Women's real-life constraints, combined with the inadequate healthcare-service implementation, could explain the non-adherence to the lifestyle-changes guidelines essential for preventing diabetes post-GDM. We suggest promoting specific coping strategies and changing the healthcare service approach rather than relying on women's capacity to initiate the necessary changes.

## KEYWORDS

ethnic differences, gestational diabetes, healthcare delivery, prevention of diabetes, psychological aspects

Cecilie Wium and Cecilie Varsi should be considered joint senior author.

<sup>†</sup>Deceased

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2021 The Authors. *Diabetic Medicine* published by John Wiley & Sons Ltd on behalf of Diabetes UK

## 1 | INTRODUCTION

Gestational diabetes mellitus (GDM), affecting 1%–25% of pregnancies worldwide,<sup>1</sup> is associated with adverse pregnancy outcomes and an increased risk of future type 2 diabetes in both mothers and their offspring.<sup>2,3</sup> Its prevalence<sup>1</sup> and that of type 2 diabetes after it<sup>3,4</sup> is twice as high in South Asian women, compared to European women.

Although the post-GDM type 2 diabetes risk is high in all populations examined,<sup>3</sup> the national recommended postpartum screening and subsequent lifelong medical follow-up are suboptimal.<sup>5</sup> Qualitative analyses indicate that healthcare providers fail to address this risk during the antenatal period<sup>6–9</sup> and the emotional distress linked to the GDM diagnosis, making women resistant to follow-up.<sup>6–8</sup>

Therefore, understanding women's experience with GDM is crucial.<sup>8–10</sup> Contrary to an internalised responsibility often observed in Western people towards their diabetes, several South Asian immigrants externalise it, attributing the disease to general life circumstances or to God's will.<sup>11</sup> Therefore, understanding individuals' physical, behavioural and psychological beliefs about their illness is important when supporting their health-promoting behaviours.<sup>9,12,13</sup> However, limited research has addressed the health and disease beliefs about illnesses to explain the ethnic differences in healthcare post-GDM.

We, therefore, aimed to clarify the mechanisms determining unwanted behaviours (i.e. the gap between women's intentions and actions related to health-promoting behaviours post-GDM) in Nordic and South Asian women with previous GDM by comparing their experiences of healthcare services during and after pregnancy, health and disease beliefs, and socio-cultural barriers and facilitators. We applied Lipsky's theory of street-level bureaucracy (clarifying why recommendations are not implemented as intended<sup>14</sup>) to understand women's responses to the current GDM guidelines and how these influence GDM follow-up.

## 2 | METHODS

### 2.1 | Design and settings

This qualitative research utilised focus group interviews to gain insights into sensitive topics, eliciting the study's objectives.<sup>15,16</sup> These interviews were a part of the ongoing *DIAbetes in South Asians 1* (DIASA 1) cross-sectional study examining glucose metabolism using oral glucose tolerance tests (OGTTs) in women with previous GDM referred to one of three hospitals in the Oslo area, Norway; this was followed by an invitation to focus group interviews scheduled

### Novelty statement

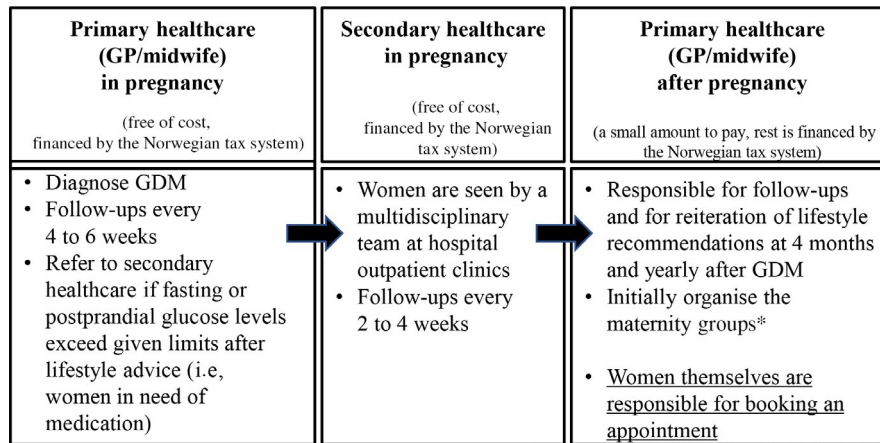
- After the gestational diabetes mellitus (GDM) diagnosis, adherence to health-promoting behaviours, which although appears to be low, may reduce the risk of developing type 2 diabetes.
- We here report that the causes of this lack of adherence were both women's real-life constraints and the healthcare system's failure to implement its services.
- We encourage healthcare providers to carefully consider mechanisms behind women's unwanted behaviours when designing strategies to prevent diabetes after GDM. These approaches should promote specific coping techniques and adopt a whole-system approach to make women more receptive to follow-up after GDM.

at a separate date. In Norway, women with GDM referred to hospital clinics have more frequent follow-up visits than those in primary healthcare, the latter reflecting women with diet-treated GDM (Figure 1).

### 2.2 | Participants

The DIASA 1 study was approved by the South Eastern Norway Regional Committee for Medical and Health Research Ethics (reference number: 2018/689). Written informed consent was obtained from the participants. The inclusion criteria were age  $\geq 18$  years, hailing from South Asia (Pakistan, India, Bangladesh or Sri Lanka) or Nordic countries (Norway, Sweden, Denmark, Finland or Iceland), and a diagnosis of GDM 1–3 years previously (according to WHO 1999<sup>17</sup> or modified International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria<sup>18</sup>). The exclusion criteria were new pregnancies, exclusive breastfeeding or drug-treated diabetes. The eligible women were recruited through a letter of invitation. Additionally, the South Asian women received a telephone invitation in their native language.

A subgroup of women in DIASA 1 was invited to participate in one of six planned focus group interviews; however, the final number of groups was determined by data saturation (i.e. information power), and the recruitment process continued until no new themes were identified.<sup>19</sup> To compare the differences and preserve the homogeneity within the groups,<sup>15</sup> the participants were purposively sampled and grouped according their ethnicity: two Nordic, two Pakistani, one Sri Lankan and one mixed South Asian group.



**FIGURE 1** The roles of different healthcare providers during a pregnancy with gestational diabetes mellitus in Norway [18]. \*Maternity groups: groups organised to gather women in same situation as new parents to share experiences (initiated by public health clinics (free of cost), then organised by the women themselves). GP, general practitioner; GDM, gestational diabetes mellitus

### 2.3 | Data collection and analysis

The focus group interviews (60–90 min each) were conducted at a convenient time outside a clinical setting at the Akershus University Hospital. A flexible interview guide (Appendix S1) developed by the research team elucidated the study objectives. The demographic and clinical data were collected from the DIASA 1's quantitative part and from a short questionnaire answered before the interviews. The interviews were conducted by the first author (AS) acting as a moderator (South Asian female endocrinologist, fluent in Norwegian, English, Urdu and Hindi) and a co-moderator (ÅS, Norwegian diabetes nurse) in the participant's preferred language spoken by AS. Additionally, an experienced interviewer (CV, last author) attended the first group session.

To provide a common language to the authors, the audio-recorded interview data were transcribed verbatim into Norwegian by AS, who later revised them for conceptual accuracy. A stepwise approach to thematic analysis was applied<sup>20</sup> before translating the final report into English:

1. AS read the entire dataset and familiarised herself with it.
2. AS and CV organised the data into codes using NVIVO version 12.
3. The codes were categorised into main and minor themes, emphasising on identifying similarities and differences within each of them.
4. AS reviewed the themes following an iterative process, ensuring a coherent pattern for each of them before considering an individual theme's validity in relation to the entire dataset. Thereafter, AS and CV ensured external heterogeneity between the themes and named them.

5. Finally, the themes were approved before the authors selected representative quotes to support the analysis that was inspired by Lipsky's theory of street-level bureaucracy<sup>14</sup>, focusing on the mechanisms behind women's unwanted health behaviours and how healthcare services should develop strategies to counteract them.

## 3 | RESULTS

Of the 96 women included in the DIASA 1 study, 28 partook in the interviews, 19 declined participation and 49 were unavailable or sick on the day of the interview (Appendix S2). The mean age was 35 years, BMI 30.3 kg/m<sup>2</sup> and HbA1c 37 mmol/mol (5.6%); 71% had abnormal glucose metabolism (Table 1). Overall, 83% of the South Asian women were first-generation immigrants.

The analysis identified five main themes that are presented with supporting quotations from the participants: lack of resilience, emotional distress, 'caught between a rock and a hard place', postpartum abandonment and insufficient guidance. The emotional distress theme was further divided into three subthemes.

### 3.1 | Lack of resilience

The mentioned health and disease beliefs were categorised into four concepts—behavioural, physical, psychosocial and spiritual (Table 2). The behavioural health concept entailed the ability to perform daily routines while the physical one signified the absence of anything that prevented women from displaying their capabilities. Both concepts were judged as inferior to the psychosocial one, where

**TABLE 1** Participants' characteristics presented as mean and (standard deviation) or number (n) and [%]

	Nordic n = 10	South Asian n = 18
Age (years)	36 (5)	34 (4)
Ethnicity:		
Norwegian	9[90]	-
Swedish	1 [10]	-
Danish/Finnish/Icelandic	-	-
Pakistani	-	9 [50]
Sri Lankan	-	6 [33]
Indian	-	3 [17]
Bangladeshi	-	-
BMI (kg/m <sup>2</sup> )	32,6 (7,0)	29,0 (6,7)
Self-reported pre-pregnancy BMI (kg/m <sup>2</sup> )	32,0 (7,1)	27,5 (6,4)
HbA1c (mmol/mol), [%]	37 (3), [5,5 (2,4)]	38 (5), [5,6 (2,6)]
IGT/IFG	4 [40]	10 [56]
Type 2 diabetes	3 [30]	3 [17]
Time since index pregnancy (months)		
Primiparous	4 [40]	7 [39]
GDM prior to the index pregnancy	4 [67]	3 [27]
Insulin ± Metformin use in pregnancy	5 [50]	9 [50]
Tertiary educated (college/university)	7 [70]	8 [44]
Employed	9 [90]	9 [50]
Hard/moderate physical activity		
Walking 10 min daily	10 [100]	17 [94]
Norwegian language skills		
Fluent	-	[39]
Average	-	[56]
Poor	-	[5,6]

Abbreviations: BMI, body mass index; GDM, gestational diabetes mellitus; IFG, impaired fasting glucose; IGT, impaired glucose tolerance.

positive attitude, coping skills, quality of life and a supportive social atmosphere were accentuated. Resilience was particularly defined as good health, regardless of the ethnicity:

If you are mentally affected by a disease, then you're sick. However, if you have the mental strength to adjust to challenges such as diabetes [...], then you can feel healthy despite having an illness.

(South Asian woman)

All focus groups highlighted the importance of perceiving life satisfaction, where a lack of stress was described as a prerequisite to achieving peace of mind, defined as quality of life. A minority of the South Asian women elaborated on the concept of spiritual health or disease:

One day I saw a girl who was unable to drive her own wheelchair [...], I thanked Allah for giving me a daughter with all functionalities [...]. Thank you Allah, do not give anybody such a disorder.

(South Asian woman)

## 3.2 | Emotional distress

### 3.2.1 | Fragmented pregnancy routines

Independent of ethnicity, the GDM diagnosis was commonly accompanied by shock and tension caused by concerns regarding excessive baby weight, future diabetes risk, frequent hospital visits and frustration about having to perform behavioural changes:

I took it very seriously; I wrote down everything I ate, all the glucose values, and woke up in the night to test...I was completely mad.

(Nordic woman)

Furthermore, the South Asian women also expressed fear of developing a disease that would affect the raising of their older children. They believed that these factors fragmented their pregnancy routines; however, the negative effects of frequent hospital visits were generally outweighed by the benefits of relevant information and appeared to act as a motivator in itself.

### 3.2.2 | Perceived stigma

The GDM diagnosis was related to shame in the majority of the women. Diabetes was associated with being overweight and aged, which, in turn, was related to lifestyle diseases and lack of self-discipline:

If you're fat, then you are dumb. You have been unable to make the right decisions in life.

(Nordic woman)

Reflecting this perceived stigma, some participants from both ethnicities avoided informing their close family about their diagnosis. This was accompanied by an inner feeling of guilt, expressed as negative reflections around their unhealthy behaviours prior to pregnancy. Thus, they considered themselves as responsible for

**TABLE 2** Health and disease beliefs gathered from the interviews, categorised into four concepts

Concept	Health beliefs	Disease beliefs
*↑↑Behavioural	<ul style="list-style-type: none"> <li>• Perform daily routines (consume healthy diet, manage exercise, and work duties)</li> <li>• No medications</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of daily routines (unhealthy diet, inactivity, failure of self-discipline)</li> <li>• Addiction to medications</li> <li>• Constant vigilance (diabetes perceived as a full-time condition)</li> </ul>
↑↑Physical	<ul style="list-style-type: none"> <li>• Physical functionalities</li> <li>• No symptoms</li> </ul>	<ul style="list-style-type: none"> <li>• Functional limitations</li> <li>• Symptoms</li> <li>• Dependency on others</li> </ul>
↑↑↑Psychosocial	<ul style="list-style-type: none"> <li>• Resilience</li> <li>• Supportive atmosphere</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of Resilience</li> </ul>
↑Spiritual	<ul style="list-style-type: none"> <li>• Blessings from a higher being</li> </ul>	<ul style="list-style-type: none"> <li>• Punishment from a higher being</li> </ul>

Notes: \*The relative frequencies of each concept mentioned are denoted by arrows: (↑) - mentioned by ≤5 women, (↑↑) - mentioned by 6–25 women, (↑↑↑) - mentioned by ≥25 women

possibly harming their unborn children. Conversely, this feeling also motivated them to maintain health-promoting behaviours during pregnancy. Nevertheless, both ethnicities acknowledged the importance of informing family members to offer them an opportunity to engage in behavioural changes.

### 3.2.3 | Conflicting advices

The South Asian women reported extraordinary respect for advices received from older generations, revealing discrepancies between those offered by healthcare providers and family members. For example, there was a general recommendation to eat additional ghee (butter) during pregnancy independent of pre-pregnancy weight. Alternatively, a participant quoted the following:

My mother used to say just eat what you like [...], we'll die one day anyway, and we would not die from eating this.

(South Asian woman)

However, the traditional idea of 'complete rest' during pregnancy that is prevalent in South Asia was not shared by our participants, since the majority of them encouraged an active lifestyle.

### 3.3 | 'Caught between a rock and a hard place'

Many participants expressed denial, a belief that something would not happen to them, as a prevalent barrier against adhering to the guidelines that recommended screening for diabetes post-GDM:

I didn't really want to know whether I had diabetes [...]. Moreover, when you don't want to

identify yourself with it, it is easy to think that maybe I am done with it.

(Nordic woman)

Another challenge mentioned was the responsibility that the women felt towards their community or children. Both ethnicities mentioned a perceived obligation to consume unhealthy desserts at social gatherings, primarily due to a lack of healthier alternatives. Furthermore, the South Asian women expressed guilt for prioritising themselves over their families. To elucidate more demanding childcare obligations among the South Asian participants, a woman said:

My daily life is like, get the children ready for kindergarten, get back [from work] at 4.30 pm, prepare dinner, give the children food, put them to bed [...]. Moreover, if they wake up and I have gone out to exercise, then it will be a complete chaos.

(South Asian woman)

The obligation to use traditional South Asian recipes, comprising daily intake of rice and chapatis, was highly respected; therefore, it was as a source of conflict. While several women consumed the same food as their family, although with smaller portions, others cooked two separate meals.

Lack of time was perceived as a major barrier to physical activity because of the participants' multiple roles as caregivers, workers and wives. To mitigate this problem, some women preferred web-based home exercises while others favoured exercise in groups as a motivational determinant. Several women proposed the idea of organised gyms with childcare and separate maternity groups for those with previous GDM.

A minority of the South Asian participants revealed restrictions regarding mixed-sex gym settings:

I believe many find it difficult to exercise with all the people at gyms [...]. Moreover, in my family, there is a shared opinion about exercising in front of boys [...].

(South Asian woman)

During the discussion, several first-generation immigrants did not recall having been provided information about maternity groups, missing the opportunity to participate.

### 3.4 | Postpartum abandonment

The participants shared a negative perception of postpartum abandonment due to the sudden reduction in the frequency of healthcare or family follow-ups after delivery:

When the delivery process finished, I felt that everything had ended. One feels left alone [...]; there was no follow-up.

(South Asian woman)

A main criticism of the healthcare guidelines was that the women themselves were responsible for booking an appointment postpartum for an OGTT or an HbA1c measurement; this was followed by a general request for an improved, organised follow-up:

In my first meeting with the general practitioner, nobody mentioned GDM [...]. When I asked if we should test it, then it was: “oh yes, if you would like to we can do it”. So, you get an impression that everything is fine, there is nothing to worry about...

(Nordic woman)

Furthermore, the participants wanted an early postpartum follow-up visit at local hospitals or in primary healthcare centres so they could keep their already incorporated routines, thus, easing the burden of implementing behavioural changes. Additionally, the need for yearly or bi-yearly reminders was frequently articulated:

At the end of the day, I realise that I need others [...] to motivate me, and it helps with groups such as this or when health professionals tell me that this is important [...]; that constant reminder makes me perform better.

(South Asian woman)

The majority of the women preferred repeated reminders from public health nurses or midwives rather than visiting their

doctors due to time constraints experienced in general practice. Furthermore, several participants expressed concerns about the lack of interest in women's emotional health after childbirth and the need for group sessions to discuss how to manage their lives more effectively. The immigrant women attributed this requirement to the sudden shift of social context after marriage, along with many responsibilities imposed on them without having the resources to ease the situation.

To enhance the follow-up visit attendance, the women proposed coordinating them with their child's regular check-ups by public health nurses or midwives. Moreover, the South Asian women suggested a mandatory follow-up that elicited a discussion about whether involving husbands in it would facilitate health-promoting behaviours.

### 3.5 | Insufficient guidance

During pregnancy, both groups recognised conflicting attitudes from different caregivers towards the need to perform an OGTT according to the guidelines:

It was my midwife who was concerned [...]; therefore, I visited the doctor, who sighed over the initiative from the midwife. I wish that general practitioners had more knowledge about this topic and that they could convey the information in an improved manner than what I experienced.

(Nordic woman)

Moreover, the lack of personalised information adapted to real-life constraints was a general complaint:

The general practitioner only suggests the food that should be avoided. However, it is equally important to provide an alternative diet.

(South Asian woman)

The participants emphasised the requirement for empowerment through information, both oral and written, to understand the risk of diabetes after GDM:

I was informed that 25%–50% of the women with GDM get diabetes later in life [...]. Further, when I hear later in life, I think about retirement age.

(Nordic woman)

All groups expressed concern regarding the long-term risk of diabetes and proposed the idea of a national website comprising information about future diabetes risk and diabetes-friendly recipes, including diets for minorities.

## 4 | DISCUSSION

Contrary to previous studies,<sup>9–12</sup> the key determinants of sub-optimal follow-up after GDM in our research were similar across the ethnic groups. Although the importance of a culturally sensitive approach was emphasised, it was found to be secondary to the need for more organised public healthcare during and after GDM.

To understand why women do not adhere to the existing GDM guidelines, we applied an underused theoretical model of healthcare, Lipsky's theory of street-level bureaucracy.<sup>21</sup> It clarifies the mechanisms behind unwanted behavioural patterns in street-level bureaucrats, defined as public employees (police, teachers or healthcare providers) with a heavy workload and few resources provided by their agency (the government). Lipsky encouraged policymakers to enhance whole-system changes rather than relying on individuals' capacity to make alterations. He suggested a supportive approach to avoid bureaucrats from modifying rules in ways they think best meet their clients' needs, although serving to maintain unwanted behaviours.<sup>21</sup>

An alternative view of Lipsky's theory applied in this study recognises women as public employees (as a wider societal view of motherhood), the child or family as her clients, and the health services as the agency. In light of this theory, we will discuss our findings to highlight strategies of how to counteract unwanted behaviours.

### 4.1 | Lack of resilience and emotional distress (= the employees are under a constant threat, making them sensitive to claims)

The constant pressure on Lipsky's bureaucrats who negotiate between policymakers and clients, make them vulnerable to claims,<sup>14</sup> mirroring the situation of the pregnant and postpartum women. During pregnancy, the burden of maintaining a strict blood glucose regime recommended by healthcare providers provoked a similar emotional response, reflecting the apprehensive consequences for the unborn child. Furthermore, South Asian women described the fear of developing a disease, illustrating the principal and vulnerable position of immigrant mothers.

Several studies have supported that emotional distress may render women resistant to follow-ups post-GDM.<sup>6–8</sup> Our study indicated that a positive attitude and resilience may effectively act as buffers against such distressing experiences, independent of ethnicity. This was substantiated by the health and disease beliefs obtained. Additionally, although holistic beliefs are assumed to be crucial for health promotion in South Asian individuals,<sup>22</sup> it, and other concepts, was found to be inferior to the psychosocial one. Therefore, we suggest a motivational approach that builds on the users' coping strategies.

Furthermore, conflicting advices and lack of communication regarding mothers' psychosocial well-being were common claims; they need to be addressed to improve women's adherence to follow-ups post-GDM, a view supported by both high- and low-income countries.<sup>7,23</sup>

### 4.2 | Time constraints (= inadequate resources)

Similar to bureaucrats commonly caught between heavy workload and inadequate resources, this study identified women's time constraints as a major concern.<sup>14</sup> Thus, we and others<sup>7,9,24</sup> advocate combining postpartum screening with the existing child services, such as vaccination programmes. To implement physical activity, we suggest organised gyms with cultural and child-friendly facilities that are partially reimbursed by the government/healthcare insurers. Local walking groups, free of cost and without the need for childcare, may promote physical activity; however, studies demonstrate inconsistent findings.<sup>13</sup> Our research rejects the perception that the South Asian individuals consider physical activity as negative and unsafe, as reported previously.<sup>9,11</sup>

### 4.3 | 'Caught between a rock and a hard place' (= service for dependent clients)

In this study, the child or the family (i.e. the clients) was dependent on the mother, particularly in some South Asian families. Contrary to Lipsky's theory, where the clients find it difficult to criticise the bureaucrats because of their dependency,<sup>14</sup> this study's clients easily acquired their demands as they were ranked first in priority. The dual pressure from healthcare policies and the family, therefore, created three motivational barriers that perpetuated women's feeling of being 'caught between a rock and a hard place': denial towards the diagnosis, prioritising obligations towards others and lifestyle hindrances such as food traditions or the perception of exercise as subsidiary. We speculate that emphasising the offspring's increased risk of diabetes would make women more receptive to behavioural modifications, as the baby's welfare was the main motivator for lifestyle changes during pregnancy.

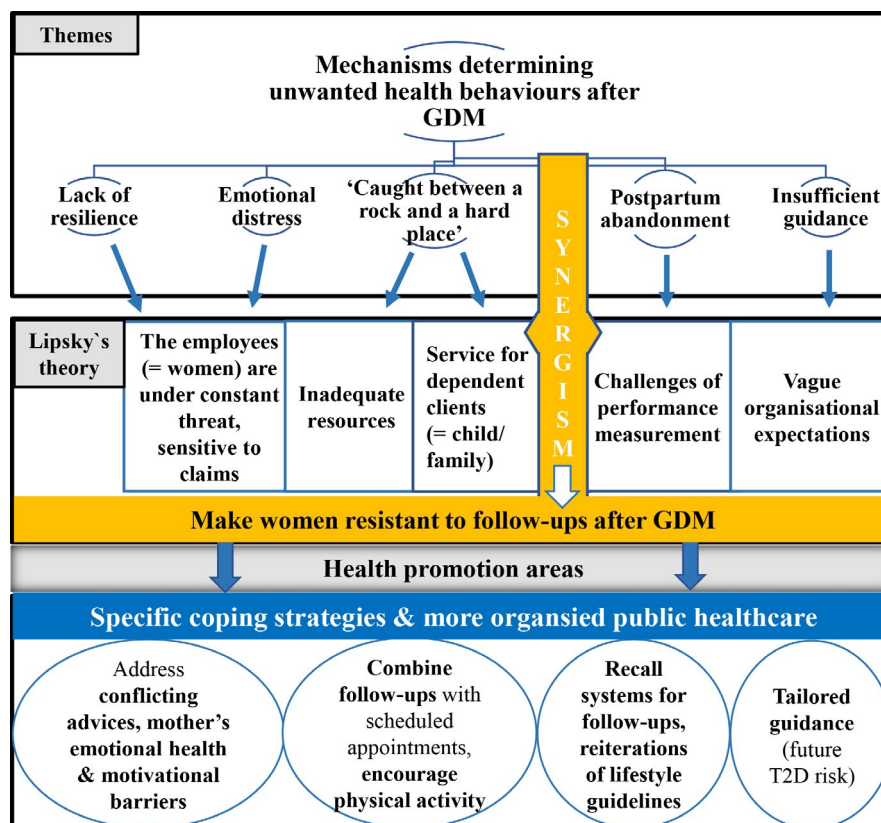
### 4.4 | Postpartum abandonment (= challenges of performance measurement)

Lipsky's theory asserts that a lack of routine makes it challenging to measure performance. Consequently, women/bureaucrats attempt to manage stress rather than adhering

to formal policies.<sup>14</sup> Thus, to mitigate women's tendency of rationalising themselves away from future diabetes risk, we recommend an organised postpartum follow-up by the public healthcare system. The appropriate time for the intervention has been found to range from pregnancy<sup>25</sup> to 6 months postpartum.<sup>26</sup> However, our findings suggest an immediate postpartum follow-up, followed by yearly or bi-yearly reiteration of lifestyle recommendations, led by community health nurses or midwives. This would allow women to capitalise on the behavioural changes made during pregnancy and counteract the perceived postpartum abandonment. Kim et al. revealed that only 16% of the American GDM patients saw themselves to be at a high risk of future type 2 diabetes.<sup>27</sup> Moreover, several studies' findings are similar to ours, identifying reminders and social support as important for adherence to postpartum screening.<sup>23,24</sup> To facilitate attendance, culturally sensitive invitations to both parents is suggested. This would acknowledge women's need for behavioural changes and provide an opportunity to focus on their emotional health after delivery.

#### 4.5 | Insufficient guidance (= vague organisational expectations)

Consistent with Lipsky's request for understandable goals<sup>14</sup> and with models suggesting a positive association between perceived risk and behaviour,<sup>27</sup> tailored information to help women realise their future risk of diabetes is recommended. While studies emphasise the enhancement of patient-provider communication about type 2 diabetes risk,<sup>24,28</sup> we and others<sup>9,11–13</sup> believe that this strategy may be unsuccessful if it is not culturally meaningful and fails to address misunderstandings, exemplified here by the scarcity of immigrant women attending maternity groups. Therefore, follow-ups post-GDM should provide understandable, tailored information and encourage women to engage in group discussions. Moreover, national websites could act as information resources for women with heightened diabetes risk, recommending nationality-specific diabetic-friendly diets. These findings are consistent with previous research<sup>7,8,29</sup> and with a trial reporting an up to 58% decline in the type 2 diabetes incidence for high-risk individuals if lifestyle modifications are implemented.<sup>30</sup>



**FIGURE 2** Suggested mechanisms behind unwanted health behaviours in women with previous GDM. The identified themes supported by Lipsky's theory uncover a negative synergism, which warrants specific coping strategies and more organised public healthcare to improve women's adherence to follow-ups after GDM. GDM, gestational diabetes mellitus



**TABLE 3** Recommendations to policymakers on how to make women more receptive to gestational diabetes mellitus guidelines, supported by participants' quotations and by examples of studies consistent (shown in black) or inconsistent (shown in red) with our recommendations

Barriers identified by participants:	Quotations:	Implications for healthcare providers:	Consistent or inconsistent with our recommendations:
Emotional distress:	<p><i>'I was always anxious when I went to the dietitian, but then I thought maybe she would teach me something new [...] or maybe I could discuss with her so I understand what went wrong this time. So, I went for my own awareness [...]. Although it is difficult, when you do everything to obtain control and do not make it' (South Asian woman)</i></p> <p><i>'I think more information early in the pregnancy would be beneficial, so when you get diagnosed [with GDM] you are more prepared and avoid the same scale of anxiety' (Nordic woman)</i></p>	<p>1: Provide a non-judgemental and positively focused care, building on user's coping strategies to prevent stress</p> <p>2: Inform women at a high risk (e.g. women with previous GDM or South Asian women) about the heightened risk for GDM as early as possible in pregnancy</p> <p>3: Address conflicting advices from caregivers</p>	<p>1: [9, 12]</p> <p>2: [10]</p> <p>3: [7]</p>
Time constraints/obligation towards others:	<p><i>'You have to attend the public health clinics anyway (because of the child's immunisation programme), so a coordination [of post-GDM follow-up visits] with these would be time-saving' (Nordic woman)</i></p> <p><i>'If some exercise options had been provided where children were allowed, because then you could meet people in similar situation, that would have been great...' (Nordic woman)</i></p> <p><i>'It's not easy to find time for exercise, particularly when you already have a child' (Nordic woman)</i></p> <p><i>'It's not unfamiliar that healthcare providers' influence is more powerful than a wife's voice in order to convey such [lifestyle] messages ...' (South Asian woman)</i></p> <p><i>'When it comes to our children, both me and my husband will do our best to make our children happy and to provide them the best possible future. So, to reach that goal, we're less able to focus on ourselves' (South Asian woman)</i></p>	<p>4: Combine follow-up visits after GDM with other appointments (i.e. the child's vaccination programme)</p> <p>5: Organised gyms with cultural and child-friendly facilities, optionally web-based sessions at home or maternity groups for women with GDM that are partially reimbursed by the government/health insurers. Walking groups (free of cost and without the need for childcare) near the house</p> <p>6: Enhance family support by encouraging family members to attend follow-ups visits, where information about how to mitigate the increased risk of glucose intolerance and overweight/obesity in the offspring of women with previous GDM should be provided</p>	<p>4: [7, 9, 24]</p> <p>5: [11, 13, 29]</p> <p>6: [2, 7, 13, 23, 29]</p>
Postpartum abandonment:	<p><i>'I didn't look forward to take that test [sugar test] again, the threshold was too high. However, if somebody had given me an appointment, I would never had called it off' (Nordic woman)</i></p> <p><i>'To bring up the knowledge after three years... that was a bit difficult to turn back to' (Nordic woman), '... the clue is just to continue [...], not a long interruption' (Nordic woman)</i></p> <p><i>'Maybe offer consultation free of cost...' (South Asian woman) and 'if you don't meet up you will be charged a fee, which will force participation' (South Asian woman)</i></p>	<p>7: Implement recall systems for follow-up visits early after delivery to both parents, initially executed by general practitioners or at local hospitals, followed by yearly or bi-yearly reiterations of lifestyle recommendations (group, individual or web-based consultations) conducted at public health clinics</p> <p>8: The follow-up should be free of cost to enhance attendance</p>	<p>7: [7, 23, 24, 26]</p> <p>8: [8, 29]</p>

(Continues)

TABLE 3 (Continued)

Barriers identified by participants:	Quotations:	Implications for healthcare providers:	Consistent or inconsistent with our recommendations:
Insufficient guidance:	<p><i>'It could be that at person likes crispbread with brown cheese [...], but the general practitioner only suggests the food that should be avoided; however, it is equally important to provide an alternative diet' (South Asian woman)</i></p> <p><i>'I thought if I get it [diabetes] after the delivery, I would not be able to eat anything, therefore it's better that I eat what I like now before I receive that message [...]. So the last two years, I haven't worried about it [diabetes] at all' (South Asian woman)</i></p> <p><i>'I didn't understand what to use in the chapati mixture [to accommodate dietary restrictions], then a woman from my home country advised me to use gram flour [...] that really worked. I don't believe my doctor could provide me such information.'</i> (South Asian woman)</p> <p><i>'The Norwegian Diabetes Association [...] maybe they could provide information for women in our situation' (Nordic woman)</i></p> <p><i>'I think it's crucial that we're taken seriously, that the general practitioner provide us the sugar test when needed, without the need to claim for it or for not being referred to the secondary healthcare centres' (Nordic woman)</i></p> <p><i>'When I took the [sugar] test in primary healthcare after pregnancy, I was told that I don't have diabetes, but nobody informed me about the need for prevention' (Nordic woman)</i></p> <p><i>'When I was pregnant, I read a lot about what would happen to me in the pregnancy, but nothing about the future, after the delivery [...]. And when you go to the doctor, the focus is always towards the child [...]. Why can't anybody ask how we are doing' (South Asian woman)</i></p>	<p>9: The risk of future type 2 diabetes should be provided in an accessible and accurate manner (i.e. women with previous GDM have an eightfold increased risk of type 2 diabetes compared to women with a normoglycaemic pregnancy, women with a South Asian ethnicity have a higher prevalence of type 2 diabetes post-GDM than white Western women, the post-GDM type 2 diabetes risk can be reduced up to 58% by physical exercise and weight loss)</p> <p>10: Healthcare providers and women with previous GDM should have access to national information materials/webpages with culturally tailored dietary guidance, that is, alternative GDM recipes for diverse ethnicities</p> <p>11: The information gap between primary and secondary healthcare related to GDM diagnosis should be narrowed through compulsory education programmes, where the need for an optimistic and culturally sensitive approach towards women, in particular immigrants, to enhance attendance and to address emotional mood symptoms, are warranted</p>	<p>9: [3, 4, 7, 9, 13, 24, 30]</p> <p>10: [7, 8, 10, 29]</p> <p>11: [7, 9, 12, 23, 24]</p>

Abbreviation: GDM, gestational diabetes mellitus.

In summary, by mapping our findings to Lipsky's theory, we aimed to clarify how real-life constraints, such as heavy workload and time restraints, make humans susceptible to unwanted behaviours. Moreover, a guideline without strategies to counteract these constraints may facilitate unwanted behaviours, such as assisting women in rationalising themselves away from their future diabetes risk. This comparison elucidates Lipsky's principle that the implementation of a recommendation depends on its usefulness, where the balance between excessive and insufficient freedom to 'the workers' is tricky, however, crucial. Therefore, to improve women's adherence to follow-ups post-GDM, we suggest guidelines that promote supportive and familiar coping strategies to alleviate emotional distress. Additionally, we propose the idea of a more organised public healthcare during and after GDM that enhances whole-system changes rather than relying on women's capacity to initiate them, for example by establishing recall systems for follow-ups post-GDM. Women should be offered tailored information about future diabetes risk, and further follow-up should comprise reiterations of lifestyle recommendations focusing on their emotional health, encouraging physical activity and addressing motivational barriers.

Based on these key findings (Figure 2), several recommendations on how to make women more receptive to the GDM guidelines are presented in Table 3. Further in-depth interviews and intervention studies are required to assess them.

## 5 | STRENGTHS AND LIMITATIONS

A major strength of this multicentre research was the inclusion of women from two different ethnicities who were cared for in the same healthcare setting. Previous studies have focused on monoethnic groups within the same healthcare setting or have been conducted at only one medical institution. Furthermore, applying Lipsky's theory to map our findings regarding strategies for approaching unwanted behavioural patterns is novel. The shared cultural background that allowed the participants to use their native languages, except Tamil, also strengthened the study's trustworthiness.

This study's limitations include a possibly biased recruitment process, as the Nordic participants were invited only through letters, whereas the South Asian women also received telephonic invitations in their native language. The proximity to the interviewer and co-moderator, who intermittently acted as healthcare professionals during pregnancy, may have impacted the women's responses. Similarly, this background could have formed preconceptions and affected the interpretation. Furthermore, the translated data could be a drawback. Finally, the study

sample was purposive, that is, it only recruited women referred to hospital, after an OGTT post-GDM; therefore, it was not representative of the population studied. However, many of the themes presented reflect issues discussed worldwide (Table 3).

This study calls for policy and practice to equally focus on specific coping strategies and adopt a whole-system approach rather than relying on women's capacity to initiate necessary changes when designing approaches to improve women's adherence to guidelines and prevent type 2 diabetes after GDM.

## ACKNOWLEDGEMENTS

The authors would like to thank the women who participated in the study, the study nurses Åshild Stavik, Åse Halsne, Jesini Anurathan and Karin Pleym, and the study coordinator Ellen Hillestad for invaluable help in the examination of participants and recruitment to the focus group interviews, where ÅS also acted as co-moderator.

## CONFLICT OF INTEREST

None declared.

## AUTHORS' CONTRIBUTIONS

AS provided substantial contributions to design, data acquisition, data analysis, the interpretation of data and drafted the article. KB, EQ, ATT, HLG, IN and STS contributed to the design and revised the manuscript critically. CW provided substantial contributions to conception, design, aided in data acquisition and revised the manuscript critically. CV revised the design, contributed to data acquisition, data analysis, the interpretation of data and revised the manuscript critically. All authors read and approved the final manuscript.

## DATA AVAILABILITY STATEMENT

Study data, apart from the anonymised citations in the manuscript, will not be shared due to Norwegian GDPR legislation.

## ORCID

Archana Sharma  <https://orcid.org/0000-0002-3188-6647>

Anh T. Tran  <https://orcid.org/0000-0003-4455-8172>

## REFERENCES

1. Zhu Y, Zhang C. Prevalence of gestational diabetes and risk of progression to type 2 diabetes: a global perspective. *Curr Diab Rep.* 2016;16:7.
2. Nijs H, Benhalima K. Gestational diabetes mellitus and the long-term risk for glucose intolerance and overweight in the offspring: a narrative review. *J Clin Med.* 2020;9:599.
3. Dennison RA, Chen ES, Green ME, et al. The absolute and relative risk of Type 2 diabetes after gestational diabetes: a systematic review and meta-analysis of 129 studies. *Diabetes Res Clin Pract.* 2021;171:108625.
4. Das Gupta R, Gupta S, Das A, Biswas T, Haider MR, Sarker M. Ethnic predisposition of diabetes mellitus in the patients with

- previous history of gestational diabetes mellitus: a review. *Expert Rev Endocrinol Metab.* 2018;13:149-158.
5. Carson MP, Frank MI, Keely E. Original research: postpartum testing rates among women with a history of gestational diabetes—systematic review. *Prim Care Diabetes.* 2013;7:177-186.
  6. Morrison MK, Lowe JM, Collins CE. Australian women's experiences of living with gestational diabetes. *Women Birth.* 2014;27:52-57.
  7. Parsons J, Sparrow K, Ismail K, Hunt K, Rogers H, Forbes A. A qualitative study exploring women's health behaviours after a pregnancy with gestational diabetes to inform the development of a diabetes prevention strategy. *Diabet Med.* 2019;36:203-213.
  8. Kaptein S, Evans M, McTavish S, et al. The subjective impact of a diagnosis of gestational diabetes among ethnically diverse pregnant women: a qualitative study. *Can J Diabetes.* 2015;39:117-122.
  9. Greenhalgh T, Clinch M, Afsar N, et al. Socio-cultural influences on the behaviour of South Asian women with diabetes in pregnancy: qualitative study using a multi-level theoretical approach. *BMC Med.* 2015;13:120.
  10. Bandyopadhyay M, Small R, Davey M-A, Oats JN, Forster DA, Aylward A. Lived experience of gestational diabetes mellitus among immigrant South Asian women in Australia. *Aust N Z J Obstet Gynaecol.* 2011;51:360-364.
  11. Lucas A, Murray E, Kinra S. Health beliefs of UK South Asians related to lifestyle diseases: a review of qualitative literature. *J Obes.* 2013;2013:827674.
  12. Netto G, McCloughan L, Bhatnagar A. Effective heart disease prevention: Lessons from a qualitative study of user perspectives in Bangladeshi, Indian and Pakistani communities. *Public Health.* 2007;121:177-186.
  13. Buelo AK, Kirk A, Lindsay RS, Jepson RG. Exploring the effectiveness of physical activity interventions in women with previous gestational diabetes: a systematic review of quantitative and qualitative studies. *Preventive Medicine Reports.* 2019;14:100877.
  14. Hpsa-africa.org [homepage on the internet]. Street level bureaucracy. 2017 [cited 2020 November 30]. Available from: [http://www.hpsa-africa.org/images/Street\\_level\\_bureaucracy\\_final\\_for\\_web.pdf](http://www.hpsa-africa.org/images/Street_level_bureaucracy_final_for_web.pdf).
  15. Barbour RS. Making sense of focus groups. *Med Educ.* 2005;39:742-750.
  16. Kitzinger J. The methodology of Focus Groups: the importance of interaction between research participants. *Sociol Health Illn.* 1994;16:103-121.
  17. WHO.int [homepage on the internet]. Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Part 1, Diagnosis and classification of diabetes mellitus. 1999 [cited 2020 November 30]. Available from: <https://apps.who.int/iris/handle/10665/66040>.
  18. Norwegian Directorate of Health.no [homepage on the internet]. Nasjonal faglig Retningslinje Svangerskapsdiabetes [National guidelines Gestational Diabetes Mellitus]. 2018 [cited 2020 November 30]. Available from: <https://www.helsedirektoratet.no/retningslinjer/svangerskapsdiabetes>.
  19. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res.* 2015;26:1753-1760.
  20. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3:77-101.
  21. Cooper MJF, Sornalingam S, O'Donnell C. Street-level bureaucracy: an underused theoretical model for general practice? *Br J Gen Pract.* 2015;65:376-377.
  22. Singh H, Cinnirella M, Bradley C. Support systems for and barriers to diabetes management in South Asians and Whites in the UK: qualitative study of patients' perspectives. *BMJ Open.* 2012;2:e001459.
  23. Muhwava LS, Murphy K, Zarowsky C, Levitt N. Experiences of lifestyle change among women with gestational diabetes mellitus (GDM): a behavioural diagnosis using the COM-B model in a low-income setting. *PLoS ONE.* 2019;14:e0225431.
  24. Dennison RA, Fox RA, Ward RJ, Griffin SJ, Usher-Smith JA. Women's views on screening for Type 2 diabetes after gestational diabetes: a systematic review, qualitative synthesis and recommendations for increasing uptake. *Diabet Med.* 2020;37:29-43.
  25. Dasgupta K, Da Costa D, Pillay S, et al. Strategies to optimize participation in diabetes prevention programs following gestational diabetes: a focus group study. *PLoS ONE.* 2013;8:e67878.
  26. Lie MLS, Hayes L, Lewis-Barned NJ, May C, White M, Bell R. Preventing Type 2 diabetes after gestational diabetes: women's experiences and implications for diabetes prevention interventions. *Diabet Med.* 2013;30:986-993.
  27. Kim C, McEwen LN, Piette JD, Goewey J, Ferrara A, Walker EA. Risk perception for diabetes among women with histories of gestational diabetes mellitus. *Diabetes Care.* 2007;30:2281-2286.
  28. Bennett WL, Ennen CS, Carrese JA, et al. Barriers to and facilitators of postpartum follow-up care in women with recent gestational diabetes mellitus: a qualitative study. *J Womens Health.* 2011;20:239-245.
  29. Dennison RA, Ward RJ, Griffin SJ, Usher-Smith JA. Women's views on lifestyle changes to reduce the risk of developing type 2 diabetes after gestational diabetes: a systematic review, qualitative synthesis and recommendations for practice. *Diabet Med.* 2019;36:702-717.
  30. Ratner RE, Christophi CA, Metzger BE, et al. Prevention of diabetes in women with a history of gestational diabetes: effects of metformin and lifestyle interventions. *J Clin Endocrinol Metab.* 2008;93:4774-4779.

## SUPPORTING INFORMATION

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

**How to cite this article:** Sharma A, Birkeland KI, Nermoen I, et al. Understanding mechanisms behind unwanted health behaviours in Nordic and South Asian women and how they affect their gestational diabetes follow-ups: A qualitative study. *Diabet Med.* 2021;00:e14651. <https://doi.org/10.1111/dme.14651>