



## The needs and experiences of women with gestational diabetes mellitus from minority ethnic backgrounds in high-income nations: A systematic integrative review

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### ABSTRACT

**Background:** Gestational diabetes mellitus (GDM) represents a growing challenge worldwide, with significant risks to both the mother and baby that extend beyond the duration of the pregnancy and immediate post-partum period. Women from ethnic minority groups who access GDM care in high-income settings face particular challenges. The aim of this systematic integrative review is to explore the experiences and needs of women with GDM from select ethnic groups in high-income healthcare settings.

**Methods:** For the purposes of this systematic integrative review, a comprehensive search strategy explored the electronic databases CINAHL, Medline, Web of Science, and Scopus were searched for primary studies that explored the needs and experiences of women with gestational diabetes from select ethnic minority groups living in high-income nations. The ethnicity of the women in the study included: East, South and Southeast Asian, Indian subcontinent, Aboriginal/First Nations, Torres Strait Islander, Pacific Islander, Māori, Middle Eastern, African, or South/Latina American. Studies were assessed with the Crowe Critical Appraisal Tool and findings were synthesised with thematic analysis.

**Results:** This review included 15 qualitative studies, one mixed method, and one cross-sectional study. Six high-income nations were represented. The voices and experiences of 843 women who originated from at least one ethnic minority group are represented. Four major themes were constructed: psychological impact of GDM, GDM care and education, GDM and sociocultural impact, and GDM and lifestyle changes.

**Discussion and conclusion:** Limitations exist in the provision of culturally appropriate care to support the management of GDM in women from select ethnic groups in high-income healthcare settings. Women require care that is culturally appropriate, considering the individual needs and cultural practices of the woman. Engaging a woman's partner and family ensures good support is provided. Culturally appropriate care needs to be co-designed with communities so that women are at the centre of their care, avoiding a one-size-fits-all approach.

### Statement of significance

#### Problem or issue

Gestational Diabetes Mellitus (GDM) is a serious yet commonly diagnosed condition and is acknowledged as one of the fastest growing types of diabetes in Australia and internationally.

Currently in Australia, GDM is prevalent in up to 15 % of pregnant women, with this number dramatically tripling over the last 10 years. This rise reflects an increase of cases in higher risk populations, such as women from ethnically, culturally and linguistically diverse backgrounds.

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*What is already known*

The reason women from ethnic groups are more at risk of GDM are multi-factorial but largely attributed to undiagnosed pre-existing insulin resistance; family history of type 2 diabetes mellitus (T2DM); higher body mass index (BMI); prevalence of polycystic ovarian syndrome (PCOS); advanced maternal age (women aged 35 +); having had a previous baby born large for gestational age; and greater disadvantage due to gaps in healthcare.

*What this paper adds*

Women from minority ethnic groups receiving GDM care in high-income nations, currently have unmet care needs. Women from ethnic minority groups receiving care in high-income nations require care that aligns with their individual needs and cultural practices. Engaging a woman's partner and family is essential to ensure good support is provided. Culturally appropriate education is paramount, for example, dietary advice tailored around traditional foods and exercise education which accommodates cultural expectations.

**Introduction**

Gestational Diabetes Mellitus (GDM) is a serious yet commonly diagnosed condition, identified as the onset of glucose intolerance occurring during pregnancy [1–5]. It is typically diagnosed during the second trimester of pregnancy at 24–28 weeks gestation, and is acknowledged as one of the fastest growing types of diabetes in Australia and internationally [6,7]. There are several serious risks and adverse outcomes associated with GDM for both women and their babies (in keeping with woman-centred language we use the term babies to refer to both unborn and newborn babies). Of particular concern for women are the increased risks of requiring insulin therapy to manage GDM; the increased prevalence of hypertension, preeclampsia, induction of labour, caesarean section, and birth trauma complications such as shoulder dystocia [1,3,6,8,9]. Babies born to mothers with GDM are at an increased risk of macrosomia, preterm birth, low APGAR scores, hypoglycaemia and respiratory problems [9]. Additionally, for women there are longer term risks associated with having GDM, including an increased risk of a GDM diagnosis in subsequent pregnancies and a 60 % increase in the overall risk of developing type 2 diabetes mellitus (T2DM) [10], as well as an increased risk in developing cardiovascular, renal and ophthalmic diseases [9,11]. Babies born to mothers with GDM are also more likely to have difficulty in maintaining a healthy BMI and have an increased risk of developing T2DM and associated cardiovascular disease [3,12]. These long-term health adversities for children born to mothers with GDM have been referred to as an intergenerational cycle of diabetes [7,13,14]. Despite these challenges, it is known that the risks and comorbidities associated with GDM can be significantly reduced with lifestyle changes, such as healthy eating and exercise together which help achieve good glycaemic control [1,15,16].

Currently in Australia, GDM is prevalent in up to 15 % of pregnant women, with this number dramatically tripling over the last 10 years. This rise reflects the implementation of new diagnostic guidelines that have resulted in more women receiving a GDM diagnosis [5,17] as well as an increase of cases in higher risk populations, such as women from ethnically, culturally and linguistically diverse backgrounds. Despite the absence of uniform GDM testing and diagnosis internationally [18],

it is known that GDM is more likely to occur and have adverse health outcomes for women from select ethnic backgrounds, in particular women who are from East, South and Southeast Asia; the Indian subcontinent; the Middle East; Africa; South/Latina American as well as women who identify as Aboriginal/First Nations; Torres Strait Islander; Pacific Islander; and Māori; [5,7,18,19]. The reasons women from

ethnic groups are more at risk of GDM are multi-factorial but largely attributed to undiagnosed pre-existing insulin resistance; family history of type 2 diabetes mellitus (T2DM); higher body mass index (BMI); prevalence of polycystic ovarian syndrome (PCOS); advanced maternal age (women aged 35 +); having had a previous baby born large for gestational age; and greater disadvantage due to gaps in healthcare [3, 17,20,21].

In many high-income countries around the world, women from these select ethnic backgrounds are at higher risk for GDM than other members of the population [22]. The need for culturally appropriate care that tailors education and information for dietary, exercise and lifestyle changes is imperative in mitigating the risks associated with GDM. The current literature exploring the needs of women from ethnic minority groups diagnosed with GDM indicates that these specific needs are not yet being met and suggests a gap in the provision of culturally appropriate healthcare for GDM management. To our knowledge a systematic integrative review has not been conducted with respect to our papers' premise. The aim of this systematic review is to integrate findings from primary research that seeks to understand the experiences and needs of women with GDM from select ethnic groups in high-income healthcare settings.

**Methodology***Design*

In addressing the aim of this systematic integrative review, studies relating to the needs and experiences of women with GDM from select ethnic groups in high income healthcare settings that utilised quantitative, qualitative, or mixed methods methodology were included. The ethnicity of the women in the study included: East, South and Southeast Asian, Indian subcontinent, Aboriginal/First Nations, Torres Strait Islander, Pacific Islander, Māori, Middle Eastern, African, or South/Latina American. The systematic approach and methodological framework of integrative reviews as prescribed by Whittemore and Knafl [23] was applied. This framework is a five-stage research methodology involving: problem identification, literature search, data evaluation and extraction, data analysis, and the presentation of results [23].

*Search strategy and results*

A systematic methodology was developed, and a protocol was published in PROSPERO (CRD42022292713). This methodology involves the systematic identification of relevant primary studies with analysis and synthesis of their qualitative findings to produce a new interpretation of the research field. Studies were sought that related to the needs of women with CALD backgrounds receiving care for their GDM in high-income nations, utilising quantitative, qualitative, or mixed methods methodology were identified. The SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) tool was used to identify search terms and strategies. The databases of CINAHL, Medline, Web of Science and Scopus were systematically searched for studies using keywords 'gestational diabetes mellitus OR gestational diabetes OR GDM' together with search strategies designed to capture ethnic women's experiences of care in high-income nations. A detailed search strategy is available in [Supplementary Table 1](#).

Studies were included if they were: [1] primary studies utilising qualitative, quantitative or mixed method approach; [2] published between 2011 and 2021 (to reflect contemporary times); [3] were published in the English language; [4] identified that the women lived in a high-income nation – as defined by the World Bank [24]; [5] the ethnicity of the women in the study included: East, South and Southeast Asian, Indian subcontinent, Aboriginal/First Nations, Torres Strait Islander, Pacific Islander, Māori, Middle Eastern, African, or South/Latina American; [6] focussed on women diagnosed with GDM, or who were up to 12 months postpartum from a pregnancy with a GDM

diagnosis. The use of ‘English’ and ‘human studies’ filters were used where possible. Studies focussing on pre-existing T2DM or post-partum onset of T2DM were excluded. Additionally, any studies that were not primary in nature, for example, literature reviews were excluded.

For the purposes of this review, the following terms are clarified. High-income nations refer to nations with a Gross National Income (GNI) of \$12696 USD per capita or more, as defined by the World Bank [24]. These nations are associated with high-income healthcare. At the time of this review, there are 80 nations across the world that hold this status [24]. The term ‘healthcare providers’ refers to: midwives, nurses, doctors, dietitians, and diabetes educators and other allied health professional who may be involved in the care of women with GDM.

The selection of final articles for analysis followed the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) flowchart [25] as outlined in Fig. 1. Articles were reviewed and managed using Covidence – an online systematic review tool, that allows for the process of screening, extraction, and analysis of data sets [26]. All articles were independently screened by two researchers. Search results from each of the databases utilising the search parameters were combined, resulting in a total of 405 articles. After duplicates were removed, 218 articles were screened by title and abstract. A further 182 articles were excluded at this stage as the content of their title and/or abstract did not meet the inclusion criteria. The full text of the remaining 36 articles were assessed for eligibility in Covidence, with 19 articles excluded at this final stage, leaving a total of 17 studies included for this review. The details of articles excluded at the full-text review are outlined in Table 1.

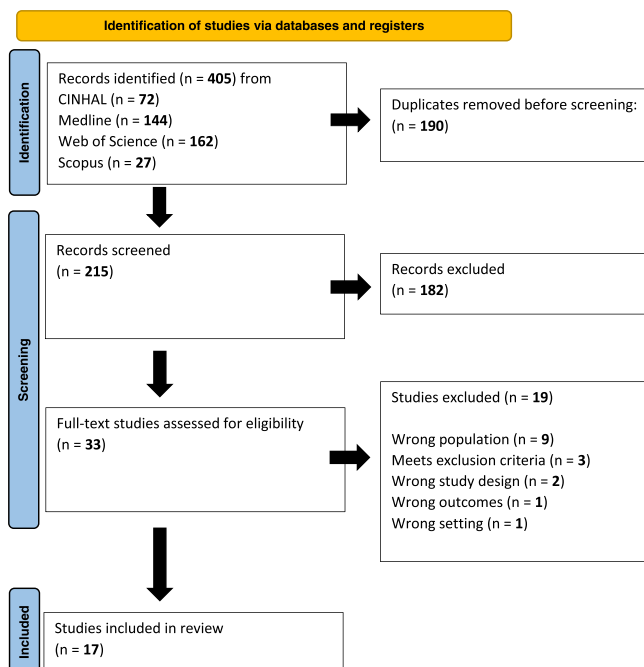
Quality assessment and data extraction

A total of 17 studies meeting inclusion criteria and reflecting the study aims were included in this review. The included studies were assessed independently by LT, DD or EK using the Crowe Critical Appraisal Tool (CCAT) to assess bias and quality of the studies [27]. The CCAT tool comprises of 8 domains, each scoring out of 5, resulting in a total of 40 possible points. The independent scores applied to each study were discussed by LT, MEH and AD and moderated to provide a final score for each included study. For two studies, there was a variance of more than 20 % in the score, which led to a third independent review by

**Table 1**  
Articles excluded at full-text screening.

Author & year	Title	Exclusion reason
Bagger et al. (2021)	Perceptions of risk and motivation for healthy living among immigrants from non-western countries with prior gestational diabetes mellitus living in Denmark	Wrong population
Campbell et al. (2018)	Paths to improving care of Australian Aboriginal and Torres Strait Islander women following gestational diabetes	Wrong population
Croxford et al. (2021)	An evaluation of dietary intakes of a selected group of South Asian migrant women with gestational diabetes mellitus	Wrong setting
Helmersen et al. (2021)	Women’s experience with receiving advice on diet and Self-Monitoring of blood glucose for gestational diabetes mellitus: a qualitative study	Wrong population
Neufeld (2011)	Food Perceptions and Concerns of Aboriginal Women Coping with Gestational Diabetes in Winnipeg, Manitoba	Meets exclusion criteria
Neufeld (2014)	Patient and caregiver perspectives of health provision practices for First Nations and Metis women with gestational diabetes mellitus accessing care in Winnipeg, Manitoba	Wrong population
Nicklas et al. (2011)	Identifying postpartum intervention approaches to prevent type 2 diabetes in women with a history of gestational diabetes	Wrong population
Oster et al. (2014)	Diabetes in Pregnancy Among First Nations Women	Meets exclusion criteria
Power et al. (2021)	Indigenous women’s experiences of diabetes in pregnancy: A thematic synthesis	Wrong study design
Power et al. (2021)	Indigenous women’s experiences of diabetes in pregnancy: A thematic synthesis	Wrong study design
Reid, et al. (2018)	The experience of gestational diabetes for indigenous Māori women living in rural New Zealand: qualitative research informing the development of decolonising interventions	Wrong population
Reid, et al. (2018)	The experience of gestational diabetes for indigenous Māori women living in rural New Zealand: qualitative research informing the development of decolonising interventions	Wrong population
Schellinger et al. (2017)	Improved Outcomes for Hispanic Women with Gestational Diabetes Using the Centering Pregnancy © Group Prenatal Care Model	Wrong outcomes
Sharma et al. (2021)	Understanding mechanisms behind unwanted health behaviours in Nordic and South Asian women and how they affect their gestational diabetes follow-ups: A qualitative study	Wrong population
Stotz et al. (2021)	Stopping Gestational Diabetes in American Indian and Alaska Native Girls: Nutrition as a Key Component to Gestational Diabetes Risk Reduction	Wrong population
Stotz et al. (2021)	Stopping Gestational Diabetes in American Indian and Alaska Native Girls: Nutrition as a Key Component to Gestational Diabetes Risk Reduction	Duplicate
Whitty-Rogers et al. (2020)	An Indigenous and Western paradigm to understand gestational diabetes mellitus: Reflections and insights	Wrong study design
Zulfiqar et al. (2017)	Barriers to a healthy lifestyle post gestational-diabetes: An Australian qualitative study	Meets exclusion criteria

MA. At the completion of this process, all 17 studies were considered of sufficient quality to be included within the review. The moderated scores from the CCAT process ranged from 72.5 % to 90.25 %.



**Fig. 1.** PRISMA Flow Diagram.

## Synthesis

In synthesising the data extracted, thematic analysis was utilised as it allows for the identification of themes relevant the research question [28]. This process was assisted with the use of NVivo Pro (version 12) software. Data analysis was conducted by LT and DD and involved the review of the literature and the development of coded themes. In the process of data analysis, all 17 studies were reviewed in their entirety, themes were collated. Descriptive themes were then created into a separate set of codes in NVIVO and finally analytical themes were generated. Themes were discussed by the team and agreed on by consensus.

## Results

This systematic integrative review analysed 17 studies, the characteristics of which are presented in Table 2. These studies included 15 qualitative studies, 1 mixed methods study, and 1 cross-sectional study. Six high-income nations were represented – Australia (n = 8), Canada (n = 4), The United States of America (n = 2), Denmark (n = 1), England (n = 1), and Sweden (n = 1). The included studies represent the voices and experiences of 843 women who had GDM at the time of the study or within the preceding 12 months and identified themselves as coming from at least one of the select ethnic minority groups outlined in the inclusion criteria. The women represent a diverse population of ethnic minority groups. Participants were described by broad ethnicity or specific cultural group, which included: Latin America, West India, South Asia, South-East Asia, Asia, Middle East, Arabic, African nations, Hispanic, Hispanic – Mexican, African American, First Nations women, Aboriginal Australian, and First Nations Mi'kmaq women; or by a specific nation, which included: India, Bangladesh, Sri Lanka, Pakistan, Fiji, The Philippines, Vietnam, China, Cambodia, Morocco, Syria, Lebanon, Thailand, Laos, Ethiopia, Eritrea, South Sudan, and Somalia. Four major themes and eleven sub-themes were constructed. These themes are outlined in Table 3. The four major themes included: psychological impact of GDM, GDM care and education, GDM and sociocultural impact, GDM and lifestyle changes.

### Psychological impact of GDM

#### Reaction to GDM diagnosis

Women reported reacting with a range of emotions when diagnosed with GDM; including feeling shocked, overwhelmed, disappointed, worried, fearful and disbelief [29–38].

*“At first it was difficult to accept that I had diabetes ... I was a little scared. To know how to take care of myself and everything ...”* [29]

Women generally expressed an awareness of the potential risks and severity that GDM presented, with some initially struggling to come to terms with their diagnosis [30,31,33]. Further, women described uncertainty about their health when they were diagnosed with GDM [36]. Women felt overwhelmed and reported feelings of “*suffering, life was hard, hopelessness, a lack of energy, lazy, no choice, and fear*”, and described that their life had become consumed with thoughts about GDM [36]. The emotion of suffering and deprivation was steeped in the perception of the life-changing event of a GDM diagnosis, and the fear that deprivation in their lives would be necessary to mitigate related health issues [33,36,37].

#### Acceptance of GDM

Despite the initial reaction to their diagnosis, women showed a willingness and resilience in accepting their GDM diagnosis and were motivated to make necessary changes for the health of their baby and self [29,30,34,35–37,39].

*“...my daughter and my upcoming daughter that ... just being able to maintain healthy and be healthy for them, be healthy to see them grow, not to be sick or anything...”* [29]

Women described the motivation to make lifestyle changes as wanting to be healthier throughout their pregnancy, to be healthy for their family, and realising they were the only person who could make the changes necessary [29,33,39]. In contrast, one study noted women were only willing to make minimal changes to their diet and lifestyle to mitigate the risks of GDM [38].

#### Concerns for baby

The health and wellbeing of baby was a frequently cited concern, with many women accepting the severity and risks associated with GDM and wanting the best for their baby [29–35,37,38–41]. Women discussed a willingness to make necessary changes to their health for the health of the baby, “*your only thought is for the baby and for a favourable pregnancy*” [37]. The psychological impact for some women was seen in their experience of being anxious and scared for their pregnancy following diagnosis. In one study, a woman experiencing healthcare in Canada who identified as being from East Africa said “*I was afraid. Scared. Not really just for me, the baby the most. Because the doctor told me so many things. The baby can be overweight, I cannot have a normal birth, that was a lot of pressure at once to just hear about it*” [41]. However, the women’s concern for their unborn baby proved to be a powerful catalyst overall, with many of the women motivated to make changes in order to prioritise the health of their baby [30,33–35,37,39,40].

### GDM care and education

#### Culturally appropriate care

The availability of culturally appropriate GDM care that is competent, sensitive, and safe underpins a foundational need for women from minority ethnic groups in high-income healthcare settings [34–36,41,42]. Communication, language, access to healthcare, health literacy, limited choice, transportation, and financial costs were all identified as barriers by many women [36,41,42]. Women reported feeling frustrated with having limited choice concerning the location of their GDM healthcare appointments, not having reliable transportation and the price of parking at clinics [36,41].

Women reported feeling frustrated when their healthcare provider did not understand or respect the specific barriers they faced in their day-to-day life outside of GDM management [41]. Culturally, some women were unable to access healthcare easily and needed their husbands to take them to appointments, which they identified as difficult when there were many appointments [41]. Additionally, language barriers occurred where translator services used by health providers were not satisfactory “*The interpreter doesn’t speak fluent Mandarin, so it’s kind of hard for me, but I have no choice, my husband is busy and I can’t really understand the medical terms...*” [40].

When the provision of (GDM) care did not consider individual cultural needs, women reported feeling unhappy and identified a lack of trust towards their healthcare provider [36]. This lack of trust indicated women felt they were not receiving care that was culturally appropriate and some reported that they felt discriminated against [36]. In several studies, women spoke of valuing long-term supportive relationships with healthcare providers [33,35,41] “*it takes a lot for like local ladies, like even myself, to warm up. to someone.*” She also said that “*if you get them bad ones come through and are a bit rough with you*” the consequence is that it “*puts that (.) gap there even further, and they don’t want to go to clinic*” [35].

**Table 2**  
Characteristics of included studies.

Article	Title	Aim of study	Study design	Data collection method	Study population	Data analysis
Bandyopadhyay et al. (2011)	Lived experience of gestational diabetes mellitus among immigrant South Asian women in Australia	To explore the experiences and understandings of South Asian women in Melbourne, Australia, after diagnosis with GDM.	Qualitative	Face-to-face in-depth interviews	17 pregnant women with GDM. Women were from ethnic minority groups – India (8), Bangladesh (6), Sri Lanka (2), and Pakistan (1). Study conducted in Australia.	Thematic analysis
Bandyopadhyay et al. (2021)	Gestational diabetes mellitus: a qualitative study of lived experiences of South Asian immigrant women and perspectives of their health care providers in Melbourne, Australia	To gain a better understanding of the lived experiences of South Asian women and their experiences of self-management and their health care providers' perspectives of treatment strategies.	Qualitative	Semi-structured individual interviews	23 pregnant women with GDM. Women were from a minority ethnic group – India (13), Pakistan (5), Sri Lanka (3), and Fiji (1), Australia (2nd generation Indian (1)). Study conducted in Australia.	Thematic analysis
Banerjee et al. (2016)	Reported Health Behaviour Changes after a Diagnosis of Gestational Diabetes Mellitus among Ethnic Minority Women Living in Canada	To examine differences in self-reported health behaviour changes during pregnancy between ethnic minority and Caucasian women diagnosed with GDM in Ontario, Canada	Cross-sectional	Questionnaire And data extracted from medical charts	898 pregnant women with GDM – With 60 % (539) of women coming from an ethnic minority group – Latin American (30), West Indian (34), South Asian (144), Southeast Asian (28), Asian (137), Middle Eastern (47), Filipino (74), other – first nations (30), and biracial (15). Study conducted in Canada.	Cross-sectional analysis using Pearson Chi square
Carolan et al. (2012)	Women's experiences of factors that facilitate or inhibit gestational diabetes self-management	To understand the factors that facilitated or inhibited women's understanding and adherence to GDM dietary self-management principles.	Qualitative	A Focus group and individual interviews – phone or face-to-face	15 pregnant women with GDM. 66 % (10) of the women were from an ethnic minority group – Indian (4), Vietnamese (2), Arabic (1), Chinese (1), Cambodian (1), and Filipino (1). Study conducted in Australia.	Interpretative Phenomenological and data was analysed using thematic analysis approach
Carolan-Olah et al. (2017)	The experience of gestational diabetes mellitus (GDM) among Hispanic women in a U.S. border region	To explore the experiences of a group of Hispanic women of Mexican origin managing their GDM in the unique constraints of U.S. Border regions.	Qualitative	Face to face interviews	18 pregnant women with GDM. The participants were Hispanic women of Mexican origin (18). Study conducted in the United States of America.	Interpretive Phenomenological Analysis
Dayyani et al. (2019)	A qualitative study about the experiences of ethnic minority pregnant women with gestational diabetes	To explore how non-Western ethnic minority pregnant women in Denmark experience the hospital-based information about gestational diabetes mellitus and how they integrate this information into their everyday life. A secondary aim was to investigate how health literacy and distributed health literacy affect this process.	Qualitative	Semi-structured Interviews	11 pregnant women with GDM. 73 % (8) women were from an ethnic minority group – Morocco (1), Vietnam (1), Somalia (3), Syria (2), and Lebanon (1) Study conducted in Denmark.	Thematic analysis
de Sequeira et al. (2019)	Culturally Tailored Resources for South Asian Immigrant Women With Gestational Diabetes: Do They Work and What's Missing? A Qualitative Study	To explore South Asian immigrant women with GDM in Canada: 1. their awareness of diabetes education resources 2. their attitude towards information from different resources and health care providers 3. their barriers and facilitators	Qualitative	Semi-structured interviews	13 pregnant women with GDM. The women were from ethnic minority groups – India (9), Sri Lanka (2), Pakistan (1), and Bangladesh (1). Study conducted in Canada.	Thematic analysis

(continued on next page)

Table 2 (continued)

Article	Title	Aim of study	Study design	Data collection method	Study population	Data analysis
Greenhalgh et al. (2015)	Socio-cultural influences on the behaviour of South Asian women with diabetes in pregnancy: qualitative study using a multi-level theoretical approach	To understand in more detail the multiple influences on behaviour of a South Asian mother and her unborn child, theorise how these influences interact and build over time and inform the design of culturally congruent, multi-level interventions for individuals and communities.	Qualitative	Group story-sharing sessions (17 women) and individual biographical life narrative interviews (28 women)	45 women with a history of GDM. The women came from ethnic minority groups – Bangladesh, India, Sri Lanka, or Pakistan (exact demographics not available). Study conducted in England.	Constant comparative method
Hjelm et al. (2018)	A qualitative study of developing beliefs about health, illness and healthcare in migrant African women with gestational diabetes living in Sweden	To explore the development over time, during pregnancy and after pregnancy, of beliefs about health illness and healthcare of migrant women with GDM born in Africa living in Sweden.	Qualitative	Semi-structured interviews	9 pregnant women with GDM. Women were from ethnic minority groups – African-based nations (9). Study conducted in Sweden.	Krippendorff
Jirojwong et al. (2017)	Going up, going down: the experience, control and management of gestational diabetes mellitus among Southeast Asian migrant women living in urban Australia	To explore how Southeast Asian migrant women in Australia experience and manage GDM	Qualitative	Interviews	19 women who were pregnant and had GDM (14) or post-partum up to 4 months (5). The women were from ethnic minority groups – Vietnam (8), Cambodia (7), Thailand (3), and Lao People's Democratic Republic (Laos) (1). Study conducted in Australia.	Thematic analysis
Kirkham et al. (2021)	'No sugar', 'no junk food', 'do more exercise' - moving beyond simple messages to improve the health of Aboriginal women with Hyperglycaemia in Pregnancy in the Northern Territory - A phenomenological study	The study aimed to explore Aboriginal women's experiences of hyperglycaemia in pregnancy, associated health care, and their understandings of the condition and health behaviours, to better understand women's specific needs and inform future systems change.	Qualitative	Interviews	35 women – pregnant and with GDM (2), history of GDM (25), and a history of T2DM (10). Women were of an ethnic minority group – Aboriginal Australian (35). Study conducted in Australia.	Analysed inductively
Siad et al. (2018)	Understanding the Experiences of East African Immigrant Women with Gestational Diabetes Mellitus	To provide an exploratory, qualitative account of a GDM diagnoses and the experiences of diabetes care by East African immigrant women	Qualitative	Written questionnaires; interviews; and field notes	10 pregnant women with GDM. Women were from ethnic minority groups – Ethiopia (5), Eritrea (2), South Sudan (2), and Somalia (1). Study conducted in Canada.	Inductive thematic analysis
Tang et al. (2015)	Perspectives on prevention of type 2 diabetes after gestational diabetes: a qualitative study of Hispanic, African-American and White women	To explore the perspectives of Hispanic, African-American and White women affected by GDM.	Qualitative	Semi-structured face-to-face Interviews	23 women with a history of GDM up to 12 months post-partum. 65 % (15) of these women were from ethnic minority groups – Hispanic (8) and African-American (7). Study conducted in the United States of America.	Qualitative analysis
Wah et al. (2019)	Self-management of gestational diabetes among Chinese migrants: A qualitative study	To explore the understanding and self-management experiences of Gestational diabetes among Chinese migrants.	Qualitative	Semi-structured face-to-face interviews	18 pregnant women with GDM. Women were from an ethnic minority group – Chinese (18). Study conducted in Australia.	Thematic analysis
Wan et al. (2020)	Ethnic Differences in Dietary Management of Gestational Diabetes Mellitus: A Mixed Methods Study Comparing Ethnic Chinese Immigrants and Australian Women	To explore the perceptions and experiences of dietary self-management among ethnic Chinese migrants with GDM compared with those of Australian-born white women with GDM.	Mixed methods	Semi-structured interviews using grounded theory approach. The use of a 3-day 24-hour dietary recall instrument.	83 pregnant women with GDM. 53 % (44) of the women were from an ethnic minority group – Chinese (44). Study conducted in Australia.	Data triangulation
Whitty-Rogers et al. (2016)		To explore and gain insight into the experiences of	Qualitative	Individual conversational	9 women with a history of GDM. Women were	Hermeneutic phenomenology (continued on next page)

Table 2 (continued)

Article	Title	Aim of study	Study design	Data collection method	Study population	Data analysis
	Aboriginal Women's Experiences with Gestational Diabetes Mellitus	Mi'kmaq women with GDM in 2 First Nations communities in Nova Scotia and also to explore how these experiences have been shaped by existing health policies.		interviews; talking circles.	from an ethnic minority group – First Nations Mi'kmaq women (9 ). Study conducted in Canada.	
Wood et al. (2021)	Incorporating Aboriginal women's voices in improving care and reducing risk for women with diabetes in pregnancy - A phenomenological study	To explore Aboriginal Australian women's and health providers' preferences for a program to prevent and improve diabetes after pregnancy	Qualitative	Semi-structured in-depth interviews	11 women with a history of GDM. 50 % of participants were women from an ethnic minority group – Aboriginal Australian (11). Other participants – health professionals (7), community advocates (4 ). Study conducted in Australia.	Inductive analysis framework

Table 3

## – Outline of themes and subthemes.

Themes	Sub-themes
Psychological impact of GDM	Reaction to GDM diagnosis Acceptance of GDM diagnosis Concerns for baby
GDM care and education	Culturally appropriate care GDM education and information
GDM and sociocultural impact	Partner and family support Community support The woman's role
GDM and lifestyle changes	Cultural dietary GDM management Cultural relationship to exercise BGL management

*GDM education and information*

GDM education and information was provided to some women by their healthcare providers and was noted to be generally useful by women [30,34,40]. Information was provided in person, through group sessions, via hospital guidelines, educational books, pamphlets, and online resources [30,34]. However, many studies found that the information provided was not always culturally tailored or women misunderstood even where it was adapted for their cultural background [30, 34,35,38,40]. In one study of Aboriginal women with GDM in the Northern Territory, Australia, women were asked whether they understood the information they received; with many noting they were confused [35]:

*“Interviewer: You know when that mob were saying that you got diabetes in pregnancy, did you understand what they meant or was it a bit confusing for you? Participant: A bit confusing Interviewer: So, when they were talking to you, did you understand or not really? Amelia: Not really Interviewer: Is there different ways they could tell you about it? Amelia: If they had someone like someone who maybe can understand Kriol but work here” [35]*

Women described that receiving further information after their GDM diagnosis was important. For example, where women were notified of their GDM by email only, they were shocked and felt lacking in information; yet once their healthcare providers gave them GDM information, they noted it compensated for that initial lack of detail [30].

Some women discussed feeling that there was an overabundance of information when it came to GDM education and information [30,35, 43]. Women reported relying on family and the internet to supplement their GDM information [40,43]. In one study, women explained that

using ‘Google search’ and ‘Chinese healthcare websites’ enabled them to better understand their condition [40]. The study by de Sequeira et al. [43] noted this phenomenon within their participants, however it was discussed that results varied in terms of women being able to discern good information from inaccurate; and some women not wanting to overwhelm themselves with more information. In a mixed methods study, Wan et al. [42] interviewed Chinese women living in Australia. The study found that the women had a strong preference for being provided with GDM education and information in a way which was culturally individuated [42].

**GDM and sociocultural impact***Partner and family support*

Partners and families were perceived by women from different cultural backgrounds as a factor that could have a positive impact in navigating GDM or act as barrier due to lack of support and understanding [30,33,34,36,38,40,43]. Perceived lack of support, in the context of a GDM diagnosis, was a stressor that women specifically discussed [30,36]. In one study, a First Nations' Mi'kmaq woman in Canada revealed the sadness she felt as her partner did not realise the importance or severity of GDM. She described this as, “...he didn't realise like what this does. To him I was lazy, you know, why don't you get out of bed and get the house clean, you know, or cook supper” [36].

Women described family pressure within their homes to continue to cook culturally amenable meals, while they themselves felt deprived in not being able to eat the same foods [29,30,40]. A Chinese woman in Australia described this difficulty:

*“I need to cook for my husband and I can't make him eat the same thing ... I need to follow him because he needs energy for his work ... and I can't avoid using sauce, you know how on the menu it says you need to avoid sauces and stuff, I can't do that, my husband wouldn't want to eat according to that” [40]*

In contrast, women who had good support felt encouraged to continue making lifestyle and dietary changes [33,40,43]. In some studies woman stated their partners and family would encourage them to exercise, monitor their BGLs, eat healthily, and check the dietary food value according to GDM information and education [33,40,43].

*Community support*

Community support was discussed in several studies as both an enabler in GDM management and a barrier [32,41]. Sense of community

and connection was specifically noted as an enabler to participating in physical activity, sharing of information, and feeling supported [32,44]. Shame and vulnerability were both associated with GDM and explored further in several studies. Women discussed experiencing embarrassment, self-consciousness and stigma within their community when disclosing their GDM diagnosis [30,36,41].

*“Because they think you have some kind of curse, like some kind of sickness” and that “even when you talk [about] it, they took it as if something is wrong with you. So, I don’t talk” [41]*

These anxieties were further exacerbated in studies where women discussed their cultural community not accepting GDM as ‘real diabetes’, with some stating they were told by others in their community that it was ‘false diabetes’ [30,41].

#### The woman’s role

The overlapping nature and paradigms of a woman’s role with respect to cultural obligations, family and maternal duties featured prominently across the different cultures and ethnic groups represented [29,32,33,36,40,41,44]. Cultural connotations of a woman’s role suggest women were often responsible for maintaining the home and cooking meals while also caring for children and for some women, undertaking employment [32,33].

Women described their exhaustion at not having enough time to do the daily duties, let alone what was additionally asked of them by healthcare providers with respect to exercise and other lifestyle changes to support GDM management [32,33,39,40,41].

*“Checking sugar is too hard, it’s just that you need to check on time, this is quite difficult ... I’m too busy taking care of my kid ...” [40].*

However, in a study of women in Canada from a South Asian background, gendered role reversal was identified, where a GDM diagnosis actioned a woman’s family to then take over the duties of the household [43].

#### GDM and lifestyle changes

##### Cultural dietary GDM management

In one Canadian study, women from ethnic minority groups were more likely than Caucasian women to make lifestyle and food changes to mitigate the risks associated with GDM by decreasing their meal sizes and increasing their physical activity [45]. They were also more likely to have a family history of T2DM, and an income of less than \$60,000 (CAD). Generally, women expressed that changing their cultural diet to better manage GDM, in line with the dietary recommendations was a struggle [29–33,37,38,40–42]. This struggle was particularly illustrated in a study of women living in Australia from a South Asian background, with one woman stating “...The food we eat is different to what they eat here, and what we are told is that all this “English” food is good and “ours is not” [38].

Challenges experienced by women with dietary changes for GDM also stemmed from low health literacy and comprehension of food values. For example, carbohydrate-dense food plays a large role in the cultural diets in many ethnicities, with women attempting to adapt their traditional food intake without feeling deprived or restricted [29,30,35,37,38,40]. However, irrespective of the worries women had expressed concerning food, many were willing to adapt their cultural diets in response to GDM information and education provided in their country of residence [31,40,41,45].

*“...all these are new for me but I can say the [GDM] experience is hard. To change everything just suddenly...sometimes I just want to give up and go back to the way I am. But I can’t do that. I can only say...stay strong*

*and ...diet right, the way they [clinic] give them that advice. It helps a lot” [41].*

With regards to changes to traditional cultural foods, women expressed confusion on how to adapt foods to be more GDM-appropriate, with perceived restriction of food undertaken by a number of women across different studies [29,32,34,37,38,40,42,43].

*“Because of GDM, it made me dislike eating staple anymore. In the past I loved eating flour-based foods like noodles, stuffed buns, dumplings, and plain buns. I ate noodles every day. But I don’t eat any now.” [42].*

Dietary restriction exacerbated reported fears, such as women worrying their baby would not grow due to a lack of nutrition [32,38] “if your diet is restricted, and the quantity is reduced, and you have limited choice, then the baby does not get proper nutrition to grow” [37].

Women’s narratives also indicated they were anxious and confused by GDM dietary information and education given to them as it was perceived as not relevant to their cultural needs; with some women having to spend additional time explaining the significance of cultural food to health care providers [34,37,40–42].

*“Whatever samples [the Diabetes in Pregnancy clinic] gave it is all Canadian – like bread, sandwiches, and the grilled foods, which I’m not used to. So, then I have to change it to my things. I think if country-specific patterns, sample diets [were created], that could be better” [43].*

Where culturally-tailored GDM dietary resources had been provided, women were either not aware the resources existed [43] or they found the information irrelevant for their individual dietary needs. “There is only rice on the menu, they don’t even have noodle. You know, just for noodle, we have so many different kinds already. even NDSS [National Diabetes Services Scheme] doesn’t have much information on it. it is quite difficult, because it’s impossible for me to change my diet, so I’m not sure how much to eat for the foods that I usually eat” [40].

Healthy eating recommendations identified as based in a ‘western diet’ by women participating in the research studies were considered confusing to many women across the literature, noting that GDM dietary guidelines simply did not fit their individual cultural needs [33]:

*“I did get appointments where I got some information. But I found it more outside of those appointments. I mean it was helpful, but it wasn’t really in depth. Well, like the food for instance, it wasn’t a very extensive list of what you could eat, it was very limited and most of the food I eat wasn’t on it.” [33].*

Financial resources were also discussed as a barrier, with women expressing concerns on how to afford healthy food [32,36,41,44]. For example, one woman noted, “food is expensive; it is a struggle one way of thinking is to eat healthy is expensive. All the education in the world won’t help if you don’t have the money” [36]. More broadly, financial barriers were also identified as a challenge to accessing GDM healthcare. In a separate study of women in Canada from East African background, one woman described the anxiety surrounding healthcare provider costs, and having no GDM healthcare due to her visa status [41].

##### Cultural relationship to exercise

Women generally acknowledged the importance of making changes to establish exercise, as well as to manage their weight, as part of their GDM diagnosis [30–33,37,40,41]. Cultural perceptions of physical activity and exercise featured strongly. Women in several studies reported they felt exercise was something that could put a strain on their pregnancy and baby. Some women described feeling sick after engaging in exercise stating it ‘can’t be good for the baby or the mother’ [32,37]. Some women’s cultural practices indicated that pregnancy was a time for women to rest and not add further strain to their body by exercising [30,37]. In a study of South Asian women in Melbourne Australia, women were “stunned” when told to exercise in pregnancy as this advice was



noted to contradict their “cultural practices and beliefs about food consumption and exercise in pregnancy” [38].

Women perceived incidental exercise such as housework and taking the children to and from school and prayer (where religion was relevant) as sufficient exercise despite the GDM education provided [32,37,44]. Confusion regarding the relationship between exercise, weight loss and management of BGLs was demonstrated in several studies [32,33,40]. “If the blood sugar is normal then I wouldn’t do exercise” [40]. Commonly, women reported that they avoided exercise as they felt it adversely affected their condition. For example, if women were experiencing muscle pain, swollen feet and sweating during their pregnancy, it was believed that exercise would only exacerbate these ailments [32,33].

Engaging in exercise was frequently perceived as difficult or not culturally appropriate [30,32,37,38,41]. For example, in a study of women living in Australia from a South Asian background, exercise was described as difficult to do alone as women stayed home as the homemaker and it was rare for them to leave the house without their husband chaperoning [37]. Similarly, some women felt embarrassed when participating in exercise. In Wood et al.’s study [44], Aboriginal women in Australia spoke about how walking as a type of exercise within their community was considered an activity engaged in by ‘Balandas’, (a term meaning Europeans/a white person) and it would be considered “shameful” and “embarrassing” to participate in walking or similar exercise activities publicly.

#### BGL management

Blood glucose level management is recognised by women as an integral part of managing GDM [30,31,33,37,40,42]. A woman living in Australia from a South Asian background, expressed her anxiety about daily BGL monitoring. “When I tested my blood sugar, if it was high it made me very anxious and if it was normal I felt release” [34]. When BGLs were controlled well, women felt secure about their GDM management, with one woman saying, “the fact that I measured the BG(L), that the doctor assessed the results and that they were (BGL) actually fine [...], that had a calming effect on me” [30].

As part of BGL management following GDM diagnosis, dietary changes were accepted by some groups of women as necessary [42,43]. Women discussed feeling concerned about fluctuating BGLs and their fear of being directed to use insulin [37]. Consequently, women reported they experimented with their dietary intake based on foods that gave them ‘good’ BGL readings [37]. In one study, however, a woman discussed using insulin as an easier option to manage BGLs, as opposed to making dietary and exercise changes [33].

Managing the BGL was also perceived as confusing, with some women reporting that they experimented with their prescribed medication regimen [40]. One woman discussed checking her BGL and questioning whether she needed to administer her insulin:

*“Sometimes if I check my sugar an hour later, it’d be high, but when I check again after an hour, that’s two hours after the meal, it’d be within the range ... so sometimes I am confused, like do I really need insulin or not ... the doctor has recently started asking me to inject another dose of insulin before breakfast... I haven’t been following them because I checked myself with the two-hour standard and it was normal” [40].*

#### Discussion

This review aimed to explore the existing research pertaining to the experiences and needs of women with gestational diabetes mellitus (GDM) who are from select ethnic minority groups receiving GDM care within in high-income healthcare settings. Four themes were constructed: psychological impact of GDM; GDM care and education; GDM and sociocultural impact; and GDM and lifestyle changes. Overall, the findings of this review demonstrate that there are significant limitations in the provision of culturally appropriate and individualised care to

support women following diagnosis of GDM who are from minority ethnic groups that have higher risk factors for GDM. The discussion draws on key areas that were identified in the review.

A diagnosis of GDM was associated with a range of psychological responses among women from ethnic minority groups. Women demonstrated they were resilient in accepting their GDM diagnosis and were amenable to making changes to their lifestyle to mitigate the risks of the condition. The greatest motivator women universally shared was their desire to ensure their baby was healthy throughout their pregnancy. However, the literature also revealed gaps exist in the provision of care that is a) culturally appropriate to women from ethnic minority groups and b) is tailored to women’s individual needs. Additionally, the literature revealed that there are gaps in healthcare providers’ understanding of the different inequities and challenges these women face in their day-to-day lives.

Exercise is considered an important factor in the management of GDM, as well as part of overall healthy pregnancy care guidelines. However, cultural beliefs, perceptions and individual values surrounding both the safety and the role of exercise during pregnancy presents as a barrier for many women across different ethnic groups [32,46]. Lower physical activity levels and engagement with exercise behaviours connected with the belief that exercise during pregnancy could be bad for the baby’s health reveals that many women perceive that basic incidental exercise is sufficient to manage their GDM [32,47]. While women fear the risk GDM poses to their unborn child, there is also a common fear that exercise poses a risk to the pregnancy and the baby [46]. This significant finding highlights a substantial gap in the capacity of healthcare providers to translate existing evidence-based recommendations into culturally appropriate information; in a way that supports women from different ethnic and cultural backgrounds feel safe to engage in recommended exercise behaviours for GDM management, and for maintaining a healthy weight throughout pregnancy [48].

The second important lifestyle behaviour that plays a significant role in the management of GDM is diet [49,50]. In the absence of culturally appropriate dietary education and information following GDM diagnosis, some women exhibited behaviours of food restriction and a general lack of understanding of food values provided by healthcare providers [50]. These findings emphasise that a change in diet in response to a GDM diagnosis should not disregard a women’s traditional food practices, but rather there should be a tailored interplay of keeping with traditional foods and culturally meaningful adaptations identified that align with GDM recommendations. The ability to maintain such changes was further complicated by the sociocultural support women had around them. The importance and impact of partner, family and community involvement showed that where women were supported during pregnancy, they were more likely to make positive changes, a finding reflected in the literature on CALD women’s experiences of breastfeeding and maternity care more broadly [51,52]. However, where support was either lacking or did not encompass an understanding of the challenges GDM posed to women, those women were less likely to feel supported and found looking after themselves challenging.

This review identified that following a diagnosis of GDM, women from ethnic minority groups residing in high income nations felt they did not receive culturally appropriate care. This can lead to sub-standard GDM management and care as women are less likely to comprehend GDM education and information provided by healthcare providers which limits their ability to make the changes necessary to mitigate health risks associated with GDM. Because women from CALD backgrounds are likely to receive poorer quality healthcare in high-income contexts than their non-CALD counterparts [53], it is particularly important that healthcare providers and healthcare institutions are knowledgeable in regard to CALD women’s experiences of receiving care for GDM. Grand-Guillame et al. [52] suggest user-side characteristics which provide a barrier to quality health care such as inadequate language skills, ease of ability to access services, ability to pay and social capital may be offset by provider-side characteristics such as

approachability (factors that allow individuals to know the provider exists and can be reached), acceptability (the service is judged to be adequate and appropriate) and availability (conditions that allow a provider to be physically reached in a timely manner and with sufficient resources to provide care).

Despite the value and importance of user-side barriers being overcome by provider-side characteristics in the provision of better care for women from CALD backgrounds, Shorey et al. [53] found in their systematic review on cultural competence in maternity health care providers that while providers show evidence of cultural knowledge and cultural experiences in the context of culturally competent care, there was no evidence of cultural skill, the ability to collect relevant cultural data or perform a culturally based physical assessment accurately. They further identified a lack of time and resources as well as the erroneous assumptions that ethnic minority groups are a homogenous group as impediments to the provision of culturally competent care. The individualisation of care which addresses the complexity and subjectivity of the individual is one way providers can better address user-side barriers, especially in GDM care provision.

## Recommendations

Following investigation of the experiences of women from minority ethnic groups receiving care in high-income nations, several currently unmet needs were identified in relation to GDM-specific healthcare. This review suggests women from ethnic minority groups receiving care in high-income nations require care that aligns with their individual needs and cultural practices. Engaging and educating a woman's partner and family is essential to ensure good support is provided and to mitigate any barriers. Culturally appropriate education is paramount, for example, dietary advice tailored around traditional foods and exercise education which accommodates cultural expectations. An overview of these needs is outlined in Table 4.

## Strengths and limitations

This systematic integrative review is an important piece in exploring existing research into the lived experiences and identified needs of women with GDM from select ethnic groups living in high-income healthcare settings. A significant strength of this review was the representation of six different high-income nations and women from diverse ethnic minority groups, totalling 843 voices and experiences. The diversity of representation lends strength to the findings and their transferability across cultural groups. A recognised limitation was the inclusion of articles only written in the English language, therefore, there may be studies conducted in other high-income nations that were not included in this review, which may present alternate viewpoints. It is worth noting that responses of women may not be truly reflective of their experiences due to cultural influence, as noted in some studies with women largely not emphasising their own needs and experiences in their day-to-day life following GDM diagnosis. It is also important to emphasise the data synthesised in this review comes from a range of diverse cultural backgrounds and it is not possible to draw one conclusion of CALD women's experiences of GDM care in high-income contexts from this review. Another limitation is that the majority of included studies did not examine differences in breastfeeding practices between women who were recent arrivals and those who had lived in the host country for many years, meaning this review is not sensitive to potential differences in needs between these two groups.

## Conclusion

This review explored the experiences and needs of women with GDM from ethnic minority groups in high-income healthcare settings using a systemic integrative review process. Our review found that women did not experience culturally appropriate GDM care, resulting in their

**Table 4 –**  
Identification of the needs of women.

Themes and sub-themes	Identified needs of women
<b>Psychological impact of GDM</b>	Prenatal GDM education to at risk ethnic groups GDM counselling
Reaction to GDM diagnosis	Culturally appropriate group sessions to share GDM experiences and information
Acceptance of GDM diagnosis	
Concerns for baby	
<b>GDM care and education</b>	Healthcare providers to engage with ethnic communities to codevelop GDM culturally appropriate and safe healthcare model, education and information
Culturally appropriate care	Healthcare providers to have cultural competency
GDM education and information	Education and information in easy to access ways: <ul style="list-style-type: none"> <li>• Online/audio videos and online group access</li> <li>• Translated written material</li> </ul> Collaborative and flexible relationship between healthcare provider and woman A model of continuity of care – acknowledging the multidisciplinary nature of GDM care Provision of partner/family education on 'how to support' a woman with GDM
<b>GDM and sociocultural impact</b>	Engaging partner to attend GDM education and appointments with woman Codeveloping community GDM awareness initiative
Partner and family support	
Community support	
The woman's role	
<b>GDM and lifestyle changes</b>	Culturally appropriate and tailored adaption of traditional food – "you don't have to westernise or restrict food in your life!" Flexible tailored education resources: <ul style="list-style-type: none"> <li>• Online/videos</li> <li>• Online group sessions</li> <li>• Visual aids</li> </ul> Culturally appropriate exercise: women only, group sessions in private, tailored to what women want.
Cultural dietary GDM management	
Cultural relationship to exercise	
BGL management	

identified needs not being met. Moving forward, culturally appropriate care needs to be co-designed with women and their communities to ensure women from diverse ethnic and cultural backgrounds are at the centre of their care in a tailored and culturally safe manner. This care also takes into consideration cultural sensitivities surrounding partner and family support, perceptions of food and exercise appropriateness and accessibility, and community comprehension and stigma or acceptance of GDM. Exploring culturally safe and meaningful strategies that support maintenance of lifestyle changes is also relevant to ensure women receive culturally appropriate care to support them through the postnatal period and beyond, which is a critical approach to mitigate the longer-term risks of developing T2DM and other cardiometabolic comorbidities that follow a diagnosis of GDM in pregnancy.

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## Ethical statement

None declared.

## Author contributions

LT conducted the search and identified the publications for inclusion assisted by DD and EK. MEH, AD, and MA performed the appraisal and synthesis of the literature. LT analysed the data and wrote the article. DD and EK, MA and SS reviewed and edited the article.

## Conflict of interest

None declared.

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## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.wombi.2022.08.006](https://doi.org/10.1016/j.wombi.2022.08.006).

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