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REVIEW

Beyond one size fits all: Probing patient choices in gestational diabetes management, from screening to postpartum

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Abstract

During antenatal care, gestational diabetes mellitus (GDM) screening is crucial for early diagnosis and treatment to ameliorate clinical outcomes and limit health care expenses. Dietary management and physical activity are central to GDM treatment, however, adherence is often influenced by personal preferences, socioeconomic barriers, and psychological stress. Pharmacologically, insulin and oral hypoglycemic medications, are the main GDM treatment that can be subject to patients' resistance due to fears of needles and side effects. Metformin is increasingly preferred for its ease of administration and lower cost. In the postpartum stage, regular screening for type 2 diabetes mellitus (T2DM) should always be considered despite the possible limitations that could arise, including communication gaps, lack of long-term focus, and personal barriers. Overall, women with GDM prefer personalized, flexible management plans that consider their lifestyle, support from health care professionals (HCPs), and family involvement. Addressing psychological and socioeconomic barriers through education, counseling, and support networks is crucial for improving adherence and health outcomes. Enhancing patient-centered care and shared decision-making can empower women with GDM to manage their condition effectively and maintain lifestyle changes postpartum. Therefore, this review aimed to assess pregnant women's preferences in GDM management, focusing on screening, dietary recommendations, physical activity, and treatment. Additionally, this review examined GDM care in terms of these patients' quality of life and postpartum experiences.

KEYWORDS

gestational diabetes mellitus, medication, nonpharmacological treatment, patient preferences, postpartum care

Key points

- Preferences and adherence to gestational diabetes mellitus (GDM) management are influenced by personal needs, socioeconomic barriers, and psychological stress.

Ayman Mobin and Amir Obeid are contributed equally to this study.

- Women with GDM prefer personalized and flexible management approaches, with significant emphasis on support from health care professionals and family involvement.
- Enhancing patient-centered care and shared decision-making can empower women with GDM to manage their condition effectively and maintain lifestyle changes postpartum.

1 | INTRODUCTION

Gestational diabetes mellitus (GDM) is known to be a common maternal complication that may occur during pregnancy.[1,2] In high-risk GDM cases, multiple adverse events can develop, including premature or cesarean-section delivery, hypertension, maternal dystocia, abnormal amniotic fluid, and premature rupture of membranes.[3,4] In the long term, women who experienced GDM may be subject to a recurrence in their future pregnancies.[5] Those patients are also at a six to sevenfold increased risk for future development of type 2 diabetes mellitus (T2DM) compared to healthy pregnant women.[6,7] Consequently, treating GDM combines multiple management approaches, such as screening, regular blood glucose monitoring, diet, exercise, medication, and postpartum follow-up to meet its complex nature.[8,9]

In practice, physicians are the primary and most common point of contact for patients, especially in conditions that require constant follow-up.[10] Therefore, health care professionals (HCPs) are always expected to have a pivotal role in early diagnosis, implementation of effective treatment strategies, and coordination of care.[11] Recently, the idea that individual patients are asked to make choices about their health has become largely expanded in literature.[12] This may justify why patients' expectations and the role of the doctor in the patient-physician relationship are changing.[13]

Patients are being more empowered to engage in their disease course by maintaining regular communication channels with their physicians regarding screening approaches, treatment options, and preventive measures.[14] Therefore, understanding and incorporating patients' preferences is considered an important component of care to achieve better disease diagnosis and treatment outcomes.[15] Studies suggest that patients are more willing to initiate and engage in treatments that match their views and needs.[16] However, these preferences can be influenced by patients' previous experiences, awareness of available options, personal beliefs about the effectiveness of a treatment, and the convenience of receiving or completing a particular treatment.[17] This variation in preferences can be usually seen in patients diagnosed with chronic diseases or high-burden conditions such as GDM.[18]

It is also worth mentioning that in some communities paternalistic attitudes are still present in all relationships including medical ones. Previous studies reported different levels of understanding of the diagnosis of GDM and its complications.[19–21] Other studies focused on evaluating the preferences of GDM patients who are medically insured.[22] In some settings, it has been reported that mothers and HCPs are directing their care mostly on neonatal outcomes.[23] In other cases, HCPs encounter difficulties in communicating both risk and reassurance to patients, especially in cases of maternal stress and anxiety.[24]

In the following review, we will evaluate the preferences of pregnant women for the main components of GDM management, including screening, diet, physical activity, and treatment. Moreover, this review will shed light on the quality of life of these patients and their experiences in postpartum care.

2 | PATIENTS' EXPERIENCES WITH GDM MANAGEMENT

2.1 | Screening

During antenatal care (ANC), GDM screening is applied to obtain an early diagnosis and to initiate treatment interventions that can ameliorate patient's clinical outcomes and limit health care costs.[25,26] The standard one-step screening approach is based on administering a 75 g oral glucose tolerance test (OGTT) between 24 and 28 weeks of pregnancy.[27,28] This method may require a higher medical effort and sometimes unnecessary care.[29] In recent years, a more selective GDM screening based on a woman's risk factors or a two-step screening approach using a glucose challenge test (GCT) of 50 g glucose load has been applied.[30] It has been suggested that GCT is more tolerated in comparison to OGTT and can be administered in a nonfasting period.[31] This allows women who previously experienced GDM, obesity, or impaired glycemic regulation, and present with high GDM risk to use the one-step method along with OGTT. In the absence of possible risk factors, women are given the GCT-based two-step screening strategy.[32]

The screening approach including a GCT followed by OGTT has been classified as the preferred screening strategy among GDM patients.[33] Women with risk factors for GDM preferred the one-step screening method while the two-step screening one was favored by women having normal metabolic profiles and apprehension to

do the OGTT.[34] This preference is supported by the Flemish method, in which the one-step screening strategy with an OGTT is given to women at risk of GDM, while the two-step screening strategy with GCT is offered for women at low risk.[33] In a recent study, GDM patients preferred eating within 2 h of the 1-h OGTT since most of them believed that fasting before the test may result in low glucose levels in comparison to eating within 2 h of the test.[35] In some cases, women experienced difficulties in coordinating fasting times before the test, adhering to the sugar beverage administered, and dealing with emesis, nausea, or discomfort.[36] In a comparative study, the one-step approach was correlated to the same maternal and neonatal outcomes seen in the two-step approach.[37] In practice, patients with GDM reported that the limited financial cost, coordination of fasting times and taking time off work, the convenience of laboratory location, and weekend opening times facilitated their adherence to screening.[38] In rural areas, patients experienced more limitations in laboratory capacities and screening times compared to urban dwellers.[39] The distance to be traveled to reach the screening site has been also considered an important factor that may affect patients' willingness to attend GDM screening, especially in the case of women living far from the clinic.[40] In equidistant cases, other factors are to be considered, including availability of parking, the expertize of screening staff, access to the emergency department, ease of treatment, and accuracy of results.[41]

These findings may call for further research about the available screening methods, their associated clinical outcomes, and in particular the preferences and views of GDM patients regarding the overall screening experience.[33]

2.2 | Nonpharmacological treatment

The first step in managing GDM and stabilizing glucose levels is based on a nonpharmacological plan that includes healthy dietary modifications, physical activity, and glucose tracking, which can be individually modified to match the patient's lifestyle, daily activities, and preferences.[42–44]

2.2.1 | Diet

With the global rise in GDM prevalence, adapting to dietary changes that appropriately control maternal glycemia while ensuring normal fetal growth is highly recommended.[45] Traditionally, following a healthy diet is largely focused on limiting all types of carbohydrates.[46] Despite its beneficial effect on glycemia, this approach can cause maternal anxiety and nonadherence.[47] In many cases, GDM patients consume fat instead of carbohydrates, which may elevate free fatty acids (FFA) and worsen insulin resistance (IR).[48] This may also increase nutrient transfer through the placenta, causing excessive fetal fat accumulation.[49] Therefore, improving the quality and type of food consumed can help control fasting/postprandial glucose, reduce FFA, improve insulin action, and limit excess fetal adiposity.[50] A carbohydrate-restricted approach based on high-quality carbohydrates, minimal fat consumption, balanced caloric intake, and ethnically acceptable food can ameliorate maternal adherence.[51]

As diet is central to GDM management, a better evaluation of women's acceptance of nutritional advice and its influence on dietary decisions is crucial.[52] This could allow HCPs to customize patient care based on their specific needs.[53] It has been shown that patients with GDM are more likely to lose weight and treat their condition when they are allowed to use an intervention method of their choice.[54] The relationship with HCPs is considered an important factor in affecting patients' acceptance of advice and motivation to comply with dietary recommendations.[55] In some cases, adapting to nutritional changes in a limited period can be challenging for pregnant women with GDM.[56] This may explain the evidence that many patients with GDM follow dietary recommendations temporarily, and then fall behind.[57] Poor adherence to healthy dietary habits during pregnancy and postpartum care may jeopardize maternal and fetal health.[53] The adherence of GDM women to dietary recommendations can also be challenging when they conflict with personal food preferences.[58] It has been reported that patients struggle to control cravings when following nutritional guidelines that exclude sugar-based foods or drinks.[59] Limiting the snacking habit was seen as an additional challenge for the majority of women, especially first-time mothers.[60] Patients living in a social environment offering uncontrolled food selection and quantities impose additional barriers to dietary adherence.[61] In low socioeconomic communities, patients may be unable to afford the cost of healthy food items and may lack knowledge about dietary management.[62] In addition, women with GDM may experience stress and anxiety when following dietary advice.[63]

These challenges highlight the vital importance of direct support from the woman's partner to facilitate adherence to a dietary plan within the family structure after pregnancy.[64] Therefore, continued lifestyle coaching and mental health evaluation, with proper consideration of psychological and socioeconomic barriers, should help promote dietary compliance and overall better health.[58]

2.2.2 | Physical activity

Encouraging physical activity is an important component of GDM management; however, patients' preferences and adherence to exercise may vary significantly.[65] Walking is a commonly applied exercise method during

pregnancy and several women prefer it over other options.[66] The ability to go for walks depends on the patient, her neighborhood, access to gyms or physical activity centers, and the weather.[67] For example, pregnant women from lower socioeconomic backgrounds may not live in areas safe enough to walk alone and may not have the means to afford a gym membership.[68] In the African America region, low-income women with GDM believed that physical activity during pregnancy is generally beneficial but they were convinced that some types of activities may cause adverse complications.[69] In this type of population, HCPs should consider cultural myths that can also prevent many women from exercising during pregnancy.[69] Some pre-existing medical conditions can limit patient mobility, highlighting the need to focus on their preferences and comfort during exercise.[56] In some cases, women do not have enough time to exercise regularly despite the education that they received about physical activity.[70] Many women were convinced that daily household responsibilities and children babysitting were an exercise by themselves.[71] Practically, adequate physical activity should follow the FITT (frequency, intensity, type, and time) approach recommending 30 min of moderate-intensity exercise daily for an estimated total time of 150 min per week.[72] Performing such exercise regularly has been found to control blood glucose levels.[73]

In daily life, women still face challenges in self-managing their blood glucose levels based on lifestyle modifications.[74] Some women felt that the provided information was unsuitable and did not address their needs.[75] Women with GDM felt "losing control over their pregnancy" due to the constant focus on controlling their blood glucose level through diet and exercise.[76] This highlights the importance of having HCPs who can tailor the GDM management approach to suit each woman's individual circumstances.[77] In Eastern Europe, women expressed a preference for a comprehensive program that integrates healthy eating and exercise, with a focus on addressing psychological aspects of treatment.[78] They preferred to be followed up regularly regarding their progress and to be provided with different options for appointment timing, locations, required activities, and suitable communication channels during treatment.[79] In some cases, women reported that physical activity was seen as a "chore" in treating their GDM and that it was unlikely that they would continue exercising for a long period.[80] This could be related to the excessive tiredness and physical complaints experienced during exercise.[81] Time constraints, convenience settings, and limited educational awareness were directly restricting healthy eating habits and physical activity plans.[82] Women with children reported that having insufficient time to perform exercise was their main barrier.[83] This aligns with women's preferences for continuous support from their partners and HCPs, which can enhance their health and quality of life.[84]

To achieve patient-centered care, HCPs need to have a discussion with pregnant women about their personal risks, lifestyle changes, and weight management plans.[85] This emphasizes the need to personalize lifestyle programs, taking into consideration the possible barriers that might be encountered by overweight new mothers and multiparous women.[60]

2.3 | Pharmacological treatment

In practice, 90% of women with GDM present with uncontrolled glycemia, even after an initial trial of diet and exercise.[86] At this stage, pharmacological treatment is initiated in addition to diet and exercise to control glucose levels and prevent complications.[87] Insulin remains the cornerstone of GDM treatment because of its proven safety during pregnancy due to its inability to cross the placenta and effective glucose-lowering potential.[88,89] Recent studies reported that women with GDM prefer Oral Hypoglycemic Drugs (OHD) over insulin use.[90] It appears to be correlated to the high cost, protocol's complexity, multiple injections, increased risk of weight gain, and hypoglycemia experienced during insulin use.[91] Simmons et al. reported that the psychological fear of needles, inconvenience, and injection site complications, such as bruising and infection, could limit the preference of patients toward insulin use.[92] Women who were excluded from management decisions or lacked adequate information about the short- and long-term outcomes of insulin use also reported negative experiences with the medication.[20] Those patients preferred a more informative approach regarding noninsulin treatment options and additional social support.[93,94] This emphasizes the role of HCPs in adequately informing women with GDM about insulin use, patiently answering questions, and addressing fears and expectations.[95]

The OHD, specifically metformin, can present an appealing option compared to insulin due to its ease of administration, low cost, and greater acceptance among women.[96] Patients indicated that the oral administration route is the preferred one compared to the injectable route.[97] This may explain the worldwide increase in OHD prescriptions for GDM. The results of a randomized control study revealed that 76.6% of women already taking metformin would select this medication in a subsequent gestation, while only 27.2% of subjects who received insulin proclaimed that it would be their first choice.[98] In a more recent study, all women who received metformin alone previously and 40% of women who took insulin preferred metformin in case of subsequent pregnancies affected by GDM.[99] This could be related to the lower cost, lower risk of hypoglycemia, and higher compliance experienced when taking metformin in comparison to insulin.[100] Women with GDM also preferred the use of glyburide over insulin due to its ease of administration and convenience.[101,102] In another

study, pregnant women reported equal levels of comfort and satisfaction during their medication decision-making discussion with their provider, whether using metformin or insulin.[103] Future research is also needed to supply women with GDM with more information that will guide their choice of treatment options.[104]

It is worth mentioning that variable factors are still limiting the appropriate use of antidiabetic therapy despite women's focus on glycemic control during pregnancy.[105] These factors include poor socioeconomic status and health care system, limited family and social support, pregnancy and treatment complications, and cultural and religious beliefs.[106] GDM management can be further hindered in case of limited women's attendance to follow-up appointments, inconsistent self-monitoring of glucose levels, shortage in trained staff, and absence of an appropriate management protocol.[107] Therefore, individualizing care of women with diabetes to identify underlying barriers and find solutions can improve health care.[108] This can gradually foster social and financial support as well as improve clinical services. Nonadherence to GDM medications appears common and is influenced by severe pregnancy symptoms, side effects of medications, mental health problems, poor social support, and socioeconomic status.[109] This nonadherence can be improved through education, counseling, support networks, and social interventions to achieve better health outcomes.[47,110]

Consequently, the evaluation of GDM patients' preferences is considered a key factor in guiding their decision to select any of the available pharmacological agents, including insulin, metformin, or glyburide.[111] Empowering women with GDM to self-manage will enable them to adhere more effectively to management recommendations.[112]

3 | QUALITY OF LIFE

Nowadays, health care delivery has been redirected to ameliorate the maternal experience during pregnancy and ensure that women with GDM are fully aware and engaged in their health.[113] Patients with GDM are being more adapted to their disease by seeking internet-based information along with the recommendations provided by HCPs.[114] An accurate diagnosis of GDM helps motivate an individual's behavioral ability to make healthy lifestyle changes.[115] However, some women reported feeling anxious and depressed during the early diagnostic stage of GDM.[20,21,116] In a UK-based study, women with GDM rejected their diagnosis and the educational approaches provided by health workers.[20] Some women experienced extreme psychological stress due to their fear of risking the baby's health.[117] Other women felt overwhelmed by the responsibility of managing dietary regimens, costs, clinic visits, and conflicts with their cultural practices. In turn, women with GDM requested to be psychosocially supported in case of any underlying consequence of the condition.[118] Particularly, first-time mothers and women diagnosed with pre-existing diseases such as hypertension were shocked, afraid, and anxious about their own health and the wellbeing of the fetus.[119] In contrast, empowered women with GDM advised their peers to be well organized, follow realistic plans, and avoid self-blaming.[80] Other women with GDM were constantly motivated by the health of their baby despite their desire to return to their old habits once their initial postpartum T2DM screening was negative.[120]

Women with GDM reported the importance of refining the management interventions to address the emotional stress of pregnancy.[121] This includes prioritizing women's health, evaluating personalized risk in a motivational way, considering barriers, applying a family-oriented approach, and focusing on flexible interventions throughout the screening and treatment stages.

These recommendations can help in structuring a model that involves behavior-regulating factors along with an intervention plan.[122] Women preferred to obtain detailed information about their risk and rated the health of their baby as a major motivating factor.[60] In Sweden, women appeared to be focused on their condition and regular information-seekers.[123] However, the continuous delay in getting informative GDM support, limited telephone access, and health care staff competence increased their frustration and stress.[123] The management of pregnancy by multiple health care personnel has also led to some disturbances in GDM care. In the Middle East region, women with GDM reported that they received the necessary information, followed the provided advice, and felt cared for throughout the disease course.[124] This was reflected in the ability of patients to control their anxiety and the overall situation. It is then important to consider the cultural differences and attitudes of GDM patients while applying management strategies.[123]

4 | PATIENTS' PREFERENCES FOR POSTPARTUM CARE

In the postpartum stage, women who previously experienced GDM are at a higher risk for developing T2DM.[125] Therefore, a postpartum screening for glucose intolerance should be done, and regularly repeated every 1–3 years thereafter.[93,126] This helps in sustaining lifestyle modifications, obtaining regular glucose measurements, and reducing the risk of T2DM.[2,127,128] Practically, the number of women who adhere to screening after their GDM or receive therapy for preventing T2DM is quite small.[129–131] This may be related to communication problems between patients and HCPs, which can influence their adherence to complete screening.[132,133] In the majority of cases, women and their physicians focus on postpartum complications rather than long-term maternal risk.[134] In other cases,

women remember the initial postpartum test, but few of them value the continuous screening.[135–137] A recent study found that women primarily participated in screening due to their family history of diabetes. However, limited patient education and knowledge, as well as a history of previous abortions, can prevent their engagement.[138] Karakoc et al. reported that women who adhered to diabetes screening postpartum had limited education in comparison to those who did not perform the test.[139] The most accurate understanding of postpartum risk was documented in women who adhered to screening and who were still within 1 year of delivery. In parallel, some women did not experience appropriate care from HCPs during the postpartum period.[140] The proper assessment of diabetes risk was poorly understood and sometimes underestimated.[19,21] This highlights the need to continuously reinforce patients' knowledge and adherence to screening by HCPs and staff especially for women with previous GDM experience.[141] Patients can have difficulties in attending appointments and may prefer to focus on the family, which can limit them to regularly test their glucose levels for a long-term period.[128] Women were also unable to maintain lifestyle changes postpartum due to the poorly understood health information, financial costs, low consideration of T2DM risk, lack of motivation, emotional stress, and family focus on the newborn.[142,143] In a recent study, 61% of women who did not complete an OGTT indicated their willingness to undertake one in the future.[144] However, some women did not complete their postpartum OGTT due to time lack (73%), childcare attendance (30%), and focus on the baby's health (30%).[142]

Regular group-based meetings scheduled within the first year of childbirth were approved by all women who had GDM.[145] These women received advice to maintain adherence to diet and physical exercise; however, a more extended follow-up to ensure the maintenance of lifestyle changes was not pursued.[146] This follow-up can be activated by sharing clear information and writing personalized discharge summaries that focus on treatment, testing, and timing.[147] Group meetings can allow GDM patients to meet others with the same illness, obtain maximal support, acquire more knowledge, and be encouraged enough to cope with lifestyle changes.[148] This may also help in preventing or delaying the onset of T2DM.[149] In primary health care settings, it is necessary to have a larger number of HCPs and resources as suggested by guidelines, and to follow a patient-centric approach.[150] It is worth mentioning that social support, patient preferences and experiences, risk perception, and information can limit the ability of many women with GDM to adequately discuss their health and motivate others during the postpartum period.[120] A recent study reported the need to improve women-centered care by unifying HCPs protocols regarding treatment targets, ameliorating interprofessional communication, and improving GDM care transition to postpartum care.[151,152] In the postpartum period, the health care provision for women with a history of GDM is based on understanding patients' condition, their underlying barriers, views and experiences, as well as on evaluating their long-term T2DM risk.[140]

Overall, pregnant women with GDM should be always empowered to engage in their disease management and postpartum care by sharing their preferences, experiences, and views. This helps ensure appropriate adherence and a better quality of life based on their unique characteristics (See Figure 1). A summary table comparing key findings from different studies has been included (See Table 1).

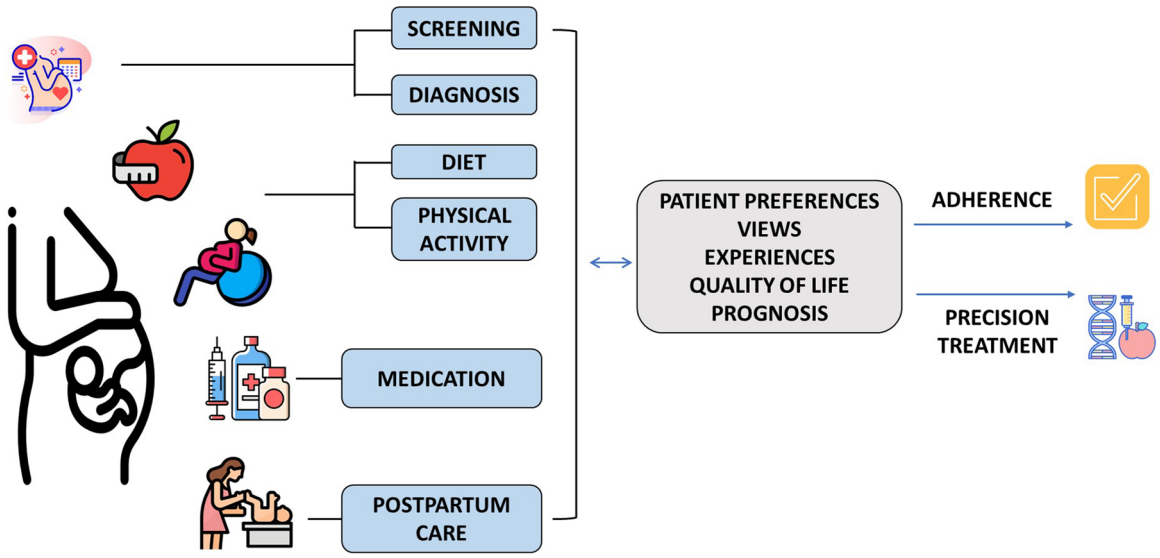

FIGURE 1 The patient-centered care in GDM practice. This figure shows the stepwise process that should be applied in practice to reach appropriate patient-centered care. GDM, Gestational diabetes mellitus.

TABLE 1 A summary of key findings on management strategies, patient preferences, and risk factors for nonadherence in GDM studies.

Disease stage	Management strategy	Preferences	Risk factors for nonadherence	Reference
Screening	75 g OGTT between 24–28 weeks of pregnancy; OR 50 g GCT	Patient with high-risk GDM: preference for OGTT Patients with stable GDM: Preference for GCT	Coordination of fasting times before the test; adherence to the sugar beverage; emesis; nausea or discomfort Financial cost; coordination of fasting times and taking time off work; convenience of laboratory location; weekend opening times; travel distance to clinic or laboratory	[28, 30, 40, 41]
Diet	Carbohydrate-restricted approach (high-quality carbohydrates, minimal fat consumption, balanced caloric intake)	Preference for direct support from the partner Preference for continued lifestyle coaching and mental health evaluation Preference for considering psychological and socioeconomic barriers	Inability to control cravings; inability to afford the cost of healthy food; lack of knowledge about dietary management	[51, 61–63]
Physical activity	30 min of moderate-intensity exercise daily for an estimated total time of 150 min per week	Preference for walking exercise	Patient cultural myths; neighborhood; access to gyms or physical activity centers; weather; pre-existing medical conditions; not enough time; household responsibilities	[56, 65, 70, 70]
Pharmacological treatment	Insulin, OHDs (metformin, glyburide)	Preference for OHD over insulin use Preference for a more informative approach regarding noninsulin treatment options Preference for oral administration route (metformin) over the injectable route Preference for glyburide over insulin use	Limited insulin use: Psychological fear of needles; inconvenience; injection site complications (bruising or infection); lack of information about the short- and long-term outcomes. Limited antidiabetic therapy use: Poor socioeconomic status and health care system; limited family and social support; pregnancy and treatment complications; cultural and religious beliefs	[89, 90, 97, 100]
Postpartum care	Postpartum screening for glucose intolerance should be done and regularly repeated every 1–3 years	Preference for postpartum OGTT.	Miscommunication between patients and HCPs; limited patient education; previous abortions; focus on baby's health and family	[120, 126, 148, 152]

Abbreviations: GCT, glucose challenge test; GDM, Gestational diabetes mellitus; OGTT, oral glucose tolerance test; OHD, oral hypoglycemic drugs.

5 | ADVANTAGES AND LIMITATIONS OF CURRENT RESEARCH

As previously discussed, the evaluation of patient preferences for GDM management has gained significant attention with the aim of improving diagnosis, disease progression, and postpartum care. It is worth noting that published studies have made important strides in understanding patient perspectives and identifying key issues such as barriers to adherence and preferred management strategies.

Current research highlights a strong preference among women with GDM for active involvement in care through the shared decision-making (SDM) process.[153] However, further evidence is needed to assess the prevalence of SDM in GDM practice, patients' preferences for this process, and its outcomes from both the perspectives of physicians and patients. These findings will provide a more comprehensive understanding of how SDM impacts GDM management and patient satisfaction. Some existing studies focus primarily on the underlying external risk factors that affect patient adherence to disease management, such as socioeconomic status, financial constraints, driving distance, and others.[58,62,68] However, there is often less emphasis on directly addressing patient preferences, which could significantly influence the disease experience. Consequently, HCPs can better personalize their approach to individual and familial conditions, leading to more centered care. An additional focus is further required to evaluate patient preferences alongside risk factors to ensure that care strategies are better aligned with patients' unique needs and circumstances.

Methodologically, most existing preference studies about GDM management have relied on qualitative approaches, such as focus groups and individual interviews.[154–156] While these methods have provided valuable outcomes, they are limited in their ability to quantify and generalize patient preferences. As research advances, there is a growing need to incorporate more sophisticated quantitative techniques, particularly stated preference methods like Discrete Choice Experiments[22] and Adaptive Choice-Based Conjoint.[157] These approaches allow researchers to systematically evaluate trade-offs between different aspects of care such as treatment options, offering a deeper and more precise understanding of patient preferences.

In addition, few studies evaluated patient preferences for the use of digital applications in GDM management.[158,159] These tools play a key role in ensuring regular follow-up, facilitating active communication with physicians, and providing accurate documentation of diagnostic, pharmacological, and nonpharmacological information. By integrating patient preferences regarding digital health solutions, future studies can develop more comprehensive and personalized management strategies, ultimately improving patient engagement, adherence, and outcomes.

6 | CONCLUSION

To manage GDM appropriately, a multifaceted process is required. This includes regular glucose check-up, nutritional changes, regular physical activity, and, when needed, pharmacological interventions. Screening and early diagnosis play a pivotal role in identifying GDM, allowing for prompt intervention and individualized management strategies. In the postpartum stage, an increased risk of developing T2DM is inevitable, emphasizing the need to monitor continuously women with a history of GDM. Patients and their needs are heterogeneous, difficult to predict, subject to change, and dependent on many factors. Therefore, the effective management of GDM is based on a mutual effort between HCPs and expectant mothers to understand their values and preferences for better patient-centered care and quality of life.

AUTHOR CONTRIBUTIONS

Conceptualization: Basem Al-Omari and Joviana Farhat. *Methodology*: Basem Al-Omari and Joviana Farhat. *Figures ideas and design*: Basem Al-Omari and Joviana Farhat. *Writing-original draft*: Ayman Mobin and Amir Obeid. *Writing-review and editing*: Imad El-Kebbi, Dean Everett, Saleh Ibrahim, Joviana Farhat, and Basem Al-Omari. *Supervision*: Basem Al-Omari and Joviana Farhat. *Project administration*: Basem Al-Omari and Joviana Farhat. All authors have read and agreed on the final version of the manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

All data used are published in the review.

ETHICS STATEMENT

None.

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