

BMJ Open Is self-management a burden? What are the experiences of women self-managing chronic conditions during pregnancy? A systematic review

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ABSTRACT

Objective This systematic review examines the qualitative literature on women's experiences of self-managing chronic conditions in pregnancy.

Design Systematic review of qualitative literature. Searches were performed in PubMed and CINAHL from inception to February 2021. Critical interpretive synthesis informed the coding framework and the analysis of the data. The Burden of Treatment theory emerged during the initial analysis as having the most synergy with the included literature, themes were refined to consider key concepts from this theory.

Participants Pregnant women who are self-managing a chronic condition.

Results A total of 2695 articles were screened and 25 were reviewed in detail. All 16 included studies concerned diabetes self-management in pregnancy. Common themes coalesced around motivations for, and barriers to, self-management. Women self-managed primarily for the health of their baby. Barriers identified were anxiety, lack of understanding and a lack of support from families and healthcare professionals.

Conclusions Pregnant women have different motivating factors for self-management than the general population and further research on a range of self-management of chronic conditions in pregnancy is needed.

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INTRODUCTION

Chronic diseases that manifest during pregnancy, or exist pre-pregnancy, can have a lasting impact on the health of the mother.¹ Numerous conditions can affect women during pregnancy, some confined to that time (eg, pre-eclampsia or gestational diabetes) and others that are longer lasting (chronic hypertension and diabetes). These conditions may lead to harm for both the mother and the baby; hypertensive disorders, for example, are one of the leading causes of maternal mortality globally.²

SELF-MANAGEMENT

Self-management has been shown to support and improve the management of chronic

Strengths and limitations of this study

- Pregnant women's experiences of self-managing during pregnancy is under researched compared with the general population. Lived experiences are often overlooked in self-management literature and by using qualitative literature we have been able to address some of these research gaps.
- Limitations include that the coding framework is constrained by how the original researchers interpreted the interviews and their interactions with patients.
- Distinguishing between pre-existing chronic conditions and pregnancy acquired chronic conditions is important, but it was not a distinction that was reflected in the dataset; it is both a limitation of the included studies and this review.
- The burden of treatment theory does not perfectly map to pregnancy, however elements of this theory are helpful in understanding how and why patients interact with self-management.

conditions in the general population and there is a growing body of research to suggest self-management of chronic conditions in the pregnant population is also effective.³ Self-management interventions in pregnancy tend to focus on self-monitoring (blood pressure, blood glucose, etc) and in some cases titrating medication (insulin). Self-management following a hypertensive pregnancy has been explored post-partum, the evidence to date suggests not only is it feasible, but it may result in better diastolic blood pressure control at 6 months post partum.⁴ In the antenatal period, the OPTIMUM-BP (Optimising Titration and Monitoring of Maternal Blood Pressure) pilot trial suggested that self-monitoring of blood pressure was both feasible and acceptable to women with chronic hypertension.⁵ Self-management of diabetes in pregnancy has also been explored. In pregnant women

with type 1 and type 2 diabetes, self-monitoring of blood glucose is common⁶ and self-management programmes in women with gestational diabetes are also becoming more commonplace.^{3 7} In the general population, self-management has been explored in numerous chronic conditions; in particular hypertension and diabetes, where there is a large body of research around understanding the patient experience.^{8 9 10} Much of this research has demonstrated patient's confidence and ability to self-manage (sometimes referred to as self-efficacy)⁸ and suggests that self-management strategies improve health outcomes for those with chronic conditions.¹¹ These conditions also affect women during pregnancy, but thus far this population are under-represented in this field of research. Moreover, research on self-management in the general population may not be wholly applicable to the pregnant population. Pregnancy presents an additional set of motivations for self-management, not accounted for in current self-management frameworks which often assume long-term self-management, whereas with pregnancy the period of management is often temporarily bounded even if it continues post partum and considerations are for the mother and baby dyad.

METHODS

This review was influenced by the critical interpretive synthesis (CIS) approach.¹² A CIS approach leaves more space for interpretation than a conventional systematic review and in theory using this approach allowed us more space to consider lived experiences across a range of chronic conditions. This approach also allowed us to iteratively develop the research question and the inclusion criteria as the search progressed and the lack of research on the self-management of chronic conditions in pregnancy became apparent. In light of a lack of data, it was necessary to limit the scope of the review to the following research question: 'what are the current behaviours and attitudes among pregnant women regarding the self-management and self-monitoring of chronic conditions in pregnancy?' (see online supplemental appendix 1).

Searches were performed in PubMed and CINAHL (EBSCOHost) (1982–present) from inception to February 2021 (see online supplemental appendix 2).

Potentially eligible studies were screened by two independent reviewers against the following inclusion criteria:

1. Chronic condition: including but not exclusively diabetes (gestational or chronic), hypertension (gestational or chronic), obesity, kidney disease.
2. Pregnancy.
3. Self-management: including but not exclusively self-monitoring, self-weighing, self-care.
4. Qualitative methods.

This review used a broad definition of self-management, 'the ability of an individual, in conjunction with family, community and healthcare professionals, to manage symptoms, treatments and lifestyle changes'.¹³ We expanded the search criteria retrospectively to include risk factors

for chronic conditions, in order to capture as much data as possible. The authors felt that qualitative literature was best placed to explore the lived experiences of people self-managing during pregnancy. Papers were excluded if the reviewers concluded that commonly recognised qualitative methods were not used, that is, interviews, focus groups, or ethnographic observations.

Two reviewers (BEJ and JK) independently reviewed the titles and abstracts of identified articles, a full-text assessment of the relevant papers by both reviewers followed. The reference lists of included studies were screened but found no further articles to include. Disagreements on articles were resolved by consensus or discussion with a third reviewer (KLT). Data extraction was conducted by BEJ and checked by the study team.

Data analysis

CIS also informed the analysis of the data.¹² Analysis began with a detailed examination of the included papers, identifying themes and developing an understanding of the material. Dixon-Woods *et al* emphasise what distinguishes a systematic review using a CIS approach is 'the aim of being critical' and questioning 'taken-for-granted-assumptions'¹² meaning that the coding framework for this review was developed to critique the idea that general population self-management research was applicable to pregnancy. During the initial analysis, elements of the Burden of Treatment theory, developed for chronic condition management in the general population, were identified in the included literature. The coding framework was revised considering this theory's key concepts, such as the effect of patient work (eg, self-monitoring, self-management, lifestyle changes) on self-management efficacy and the role of support networks, allowing for a more nuanced interpretation of the woman's experience of self-management. Data extraction was conducted by BEJ using NVivo V.12 Pro (QSR International Pty Ltd, released 2018), and a coding framework was developed by BEJ and agreed on by the study team (LH, KLT and RJM).

The burden of treatment

May *et al* have developed a theory explaining the relationship between 'sick people' and their healthcare providers in the context of chronic disease. In the absence of a possible cure, patients must engage in 'routine work' to manage the disease.¹⁴ May *et al* explain that patient work in the context of the Burden of Treatment theory includes symptom monitoring, treatment management and lifestyle changes while 'maintaining (these tasks) alongside the demands of other aspects of everyday life'.¹⁴ Transferring the burden of treatment to the patient prompts a change in the patient-clinician relationship. Within pregnancy this could theoretically provide women with more agency, as well as more responsibility.

The first interpretation of the data, reviewing the themes that already existed in the included papers, revealed the synergy with the Burden of Treatment theory; therefore,

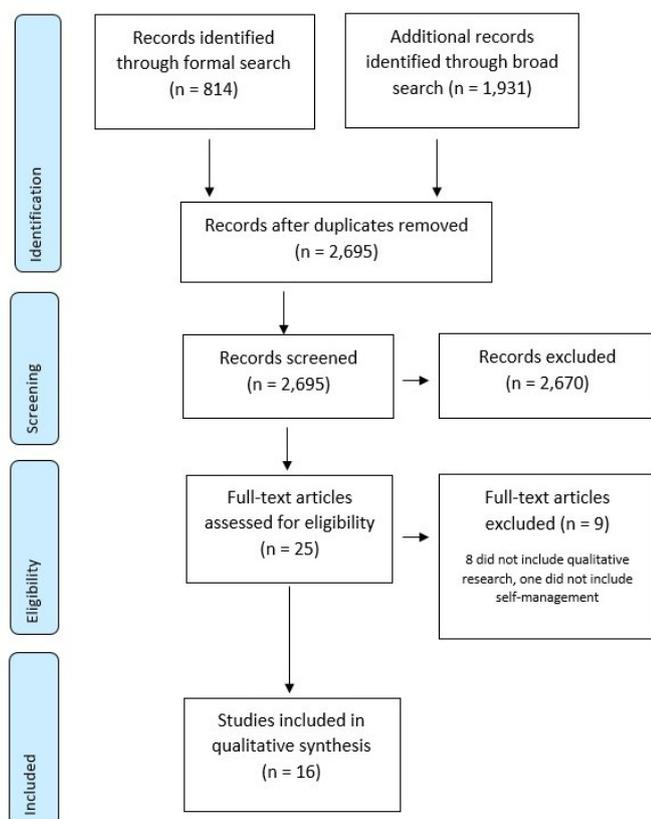


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of study search strategy.

the coding framework was iteratively mapped to two broad themes reflecting elements of the burden of treatment. These themes were grouped around motivations for self-management and barriers to self-management. As the coding progressed, more elements of the theory were incorporated into the analysis. One element of the theory is ‘the structure and performance of patient work’ a process that May *et al* call ‘sense making’ where ‘people and members of their social networks are expected to identify, understand and explain the diverse tasks that make up their work’.¹⁴ This idea was reflected in the themes concerning support from healthcare professionals and family, the impact of a lack of support, and women’s anxiety and understanding of their diagnosis.

RESULTS

Searches in PubMed and CINAHL identified 2745 articles, which when controlled for duplicates left 2695 for screening (see online supplemental appendix 2 and figure 1 for further details). The majority of articles were excluded as they did not include qualitative research or self-management, or the study population was not pregnant women. 25 articles were identified by the two reviewers for full-text review, of which 16 fulfilled the inclusion criteria (see table 1). Data quality checks using the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines were carried out (see

online supplemental appendix 3). Fifteen of the included studies were of medium to high quality. One was considered low quality because of the small sample size.

Included studies were published between 2011 and 2020 and all focused on diabetes in pregnancy. Six were conducted in the USA, four in Australia and the remaining studies were carried out in Canada, Spain, Thailand, China, Singapore and New Zealand. The studies recruited from a range of settings: gestational diabetes clinics, antenatal clinics supporting low-income women, healthcare provider’s offices, day care centres and hospital based obstetric clinics. Fifteen of the studies used one-to-one interviews and one used focus groups for primary data collection. Two studies supplemented the interviews with focus groups, one supplemented with additional diary entries. One study was a mixed-methods study, including one-to-one interviews alongside survey data. The study population for all included studies was pregnant women, although one study had a mixed population of women who were currently pregnant, women planning on getting pregnant, and women who had previously been pregnant. Only papers concerning diabetes self-management in pregnancy fulfilled the inclusion criteria, leading to the results focusing on the challenges of self-management in this disease.

The two broad themes that emerged from the data were motivations for and, conversely, barriers to self-management during pregnancy (see table 2). Under the former, women express that having a healthy baby, supportive families and supportive healthcare professionals were their primary motivating factors. Barriers to self-management included a lack of knowledge and understanding of the condition lead to feelings of anxiety, as well as a lack of support from families and healthcare professionals. The following sections will address each subtheme in detail.

Motivations for self-management

Desire for a healthy baby

The most significant motivating factor for self-management was the desire for a healthy baby. Pregnancy comes with specific concerns and anxieties, women felt anxious over the burden of self-management and the health of their baby. It was clear that many women wanted to ‘do the right thing by the baby’,¹⁵ to ensure they had a healthy start in life. Women expressed fear about the potential to pass their ill health onto the baby. Most often, the initial response to their diagnosis was concern for the baby; ‘oh my God...you know is the baby gonna be OK?’.¹⁶ Some women expressed feelings of responsibility for their condition, and their desire to minimise the effect on their baby’s health; ‘I knew I had brought it on myself by being overweight...I felt very responsible’.¹⁵

Supportive environment: family

When the familial support was positive, women were motivated to self-manage for reasons beyond the health of the baby: ‘The biggest thing I can recommend is getting support. If you try to do it on your own, it’s going to seem very confusing and tedious’.¹⁷ When speaking about her partner one woman said ‘he was very supportive in helping

**Table 1** Characteristics of included studies

Title	Year	Authors	Chronic condition	Journal	Sample size	Setting	Qualitative method
Living with gestational diabetes in a rural community	2014	Abraham and Wilk ¹⁷	Diabetes	The American Journal of Maternal and Child Nursing	10	USA	One on one interviews
Women's experiences of gestational diabetes self-management: A qualitative study	2013	Carolan ¹⁸	Diabetes	Midwifery	15	Australia Diabetes clinic	One on one interviews, focus group
Women's experiences of factors that facilitate or inhibit gestational diabetes self-management	2012	Carolan <i>et al</i> ¹⁵	Diabetes	BMC Pregnancy and Childbirth	15	Australia Diabetes clinic	One on one interviews, focus group
Experiences, perceptions and self-management of gestational diabetes in a group of overweight multiparous women	2014	Chavez-Courtois <i>et al</i> ²⁹	Diabetes	Cien Saude Colet	5	Spain	One on one interviews
'Is gestational diabetes a severe illness?' exploring beliefs and self-care among women with gestational diabetes living in a rural area of the south east of China	2016	Ge, <i>et al</i> ²¹	Diabetes	Australian Journal of Rural Health	17	China Obstetric clinics, wards	One on one interviews
The maternal experience of having diabetes in pregnancy	2011	Nolan <i>et al</i> ²³	Diabetes	Journal of the American Academy of Nurse Practitioners	8	USA	Focus groups
Self-monitoring lifestyle behaviour in overweight and obese pregnant women: qualitative findings	2018	Sheih and Draucker ³⁰	Overweight/obese	Journal of Clinical Nursing	13	USA Clinics (community health centre and health network)	One on one interviews
Socio-cultural aspects of self-management in gestational diabetes	2012	Wazqar and Evans ²²	Diabetes	Diabetes Nursing	12	Canada	Secondary analysis of one on one interviews
'I was tired of all the sticking and poking': Identifying barriers to diabetes self-care among low-income pregnant women	2015	Yee <i>et al</i> ³¹	Diabetes	Journal of Healthcare for the Poor and Underserved	10	USA Clinic	One on one interviews
Factors promoting diabetes self-care among low-income, minority pregnant women	2016	Yee <i>et al</i> ¹⁶	Diabetes	Journal of Perinatology	10	USA Diabetes clinic	One on one interviews
Lived experience of blood glucose self-monitoring among pregnant women with gestational diabetes mellitus: a phenomenological research	2017	Youngwanichsetha and Phumdoung ¹⁹	Diabetes	Journal of Clinical Nursing	30	Thailand Antenatal clinic, diabetes clinic, obstetric ward	One on one interviews
Self-management of gestational diabetes among Chinese migrants: A qualitative study	2018	Wah <i>et al</i> ²⁴	Diabetes	Women and Birth	18	Australia Antenatal clinic	One on one interviews
Ethnic Differences in Dietary Management of Gestational Diabetes Mellitus: A Mixed Methods Study Comparing Ethnic Chinese Immigrants and Australian Women	2019	Wan <i>et al</i> ²⁰	Diabetes	Journal of the Academy of Nutrition and Dietetics	83	Australia Maternity services, tertiary hospitals	One on one interviews and diary entries
The experience of gestational diabetes for indigenous Māori women living in rural New Zealand: qualitative research informing the development of decolonising interventions	2018	Reid <i>et al</i> ³²	Diabetes	BMC Pregnancy and Childbirth	10	New Zealand Primary care clinic	One on one interviews

Continued

Table 1 Continued

Title	Year	Authors	Chronic condition	Journal	Sample size	Setting	Qualitative method
'Diabetes Just Tends to Take Over Everything': Experiences of Support and Barriers to Diabetes Management for Pregnancy in Women With Type 1 Diabetes	2019	Singh <i>et al</i> ³³	Diabetes	Diabetes Spectrum	15	USA Diabetes clinic	One on one interviews
Barriers to Gestational Diabetes Management and Preferred Interventions for Women With Gestational Diabetes in Singapore: Mixed Methods Study	2020	Hewage <i>et al</i> ³⁴	Diabetes	JMIR Formative Research	15	Singapore Gestational Diabetes clinic	One on one interviews, in a mixed methods study also including a survey

me get over things',¹⁸ due to her partner's support she was able to overcome her fear of blood glucose self-testing. Families and partners who got involved in the recommended lifestyle changes and self-management activities, such as following the same diet, was motivational for pregnant women and increased their adherence to self-management and increased adherence to self-management.

Supportive environment: healthcare professionals

Similarly, a supportive and constructive relationship with healthcare professionals proved to be a strong motivator for self-management, often minimising feelings of anxiety and uncertainty. Healthcare professionals who provided self-management advice gave women more autonomy over their pregnancy, 'the diabetes educator is really friendly...she did a demo in front of me, how to inject yourself'.¹⁸ Women who

understood their condition better were able to make positive choices about their self-management; 'I would limit my foods in order to control my blood sugar'.¹⁹

Barriers to self-management
Feeling anxious and overwhelmed

In this dataset, women often described feelings of anxiety and were overwhelmed by the prospect of managing their new condition. Women reported feelings of unhappiness or low mood while learning to self-manage, calling it 'frustrating'. Some women found trying to follow self-management guidelines created lot of anxiety: 'It creates a lot of anxiety. Like I am hungry but I don't want to eat now because I don't know if I harm the baby. But I feel hungry and could not eat'.²⁰ While it was often a lack of information that made women feel anxious, there was

Table 2 Quote table: barriers and motivations for self-management

Barriers to self-management		Motivations for self-management	
Lack of knowledge and understanding	'Actually, I didn't know anything about it...So, I...thought that if you were diabetic then you kind of get it. But then I didn't know something you can just develop during pregnancy as well. So, it was quite new to me.' ³⁴	Desire for healthy baby	'I have a responsibility to care for my child...and to care for this baby inside of me...For me, I wasn't going to let anything get in the way...' ³³
Feeling anxious and overwhelmed	'With the fourth pregnancy, I had sort of lost control. I was living in the garage with my three children [and husband]. I was huge and six months [along in my pregnancy] when I was diagnosed with depression....I didn't want to do anything. I'd just wake up [and] went through the motions.' ³²	Supportive environment: family	'If it's not because of my husband, I couldn't have made it this far, like he would remind me, sometimes when I want to eat something he would just remind me not to, and like when we go for shopping he would buy the healthy stuff.' ²⁴
Lack of support: family	'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.' ²⁴	Supportive environment: HCP	'The diabetes educator is really friendly...she explained things very like, in a very good way Yes, yes and—like, she did a demo in front of me, how to inject yourself. It was really scary first time. They told me everything.' ¹⁹ 'The first pregnancy I had a lady (educator) that was really excellent, very understanding, very approachable. She would listen to my concerns and we had a conversation rather than just a one-way flow of information. And so I had a very positive experience with her.' ¹⁵
Lack of support: HCP	'You are told that you have this and nobody spends time with you, it's kind of frustrating because you want to cry. You think that it's something you did wrong' ¹⁷ 'According to my experience, what they (health professionals) discussed are all about the dietary habit of women here (in Australia), so if the suggestions could be more relevant to Chinese lifestyle, a lot of things that have been taught currently are not meaningful.' ²⁰		

HCP, healthcare professional.

some evidence that being given ‘too much information (about gestational diabetes),¹⁵ also made women feel overwhelmed. Women were negative about self-management when they perceived that it had not gone to plan: ‘When I took the higher dose [of insulin], I felt defeated...this is crazy, I don’t think my body is ever going to be perfect’.¹⁶

Lack of knowledge and understanding

A lack of knowledge and understanding often led to a lack of motivation to self-manage. Women who did not understand their condition often underestimated the seriousness of their diagnosis or heard anecdotally from other women that it was not ‘a severe illness’²¹ thus preventing women from committing to self-management. Contrastingly, others felt as though it was ‘the end of the world’¹⁷ leading to women feeling too overwhelmed to self-manage efficiently. Central to the lack of understanding was a perception of insufficient education from healthcare professionals; one woman said that she was given ‘a list of food but no instructions’ meaning ‘you really have to work it out for yourself’.¹⁵

Lack of support: family

This dataset reported traditional forms of support networks: women’s families, friends, and their healthcare professionals. A key theme to emerge from the data was the negative effect of a lack of familial support, which made women feel isolated and alone. Without strong family support networks women either stopped complying with self-management or lost the motivation to self-manage. Concerning dietary self-management women reported their families being unwilling to follow the same dietary restrictions because ‘you can’t expect everybody to change everything’,¹⁵ or failing to understand the importance of the dietary guidelines. Some women expressed that adhering to the strict diabetes diet made them feel socially isolated.

Lack of support: healthcare professionals

A discordant relationship with healthcare professionals made women feel less motivated to self-manage, ‘I love my OBGYN, but I feel they are always in a hurry. Like they don’t have time to sit there and talk to you about what to do about it (GDM), but they are always in a hurry’.¹⁷ One woman described her healthcare professional’s attitude as ‘here, you take the ball, and you run with it’,²² but found that when her family were not informed about her self-management needs, it was difficult for her to stay on track. Women who wanted to self-manage reported either not being supported adequately by their healthcare professionals or subject to paternalistic responses: ‘you have no idea what you’re doing, I know best, here’s what we’re going to do’.²³ Some women had difficulty accessing information and understanding the self-management tasks, particularly when there were language barriers: ‘It’s a bit difficult because my English isn’t very good...I have always been asking for an interpreter, but I have never got one’.²⁴ There were also concerns ranging from a lack of

information (‘they didn’t tell me what’s the side effects for the baby’¹⁵) to accusations of patronising healthcare professionals who ‘talked down to [me]’ and ‘didn’t trust me’.¹⁷

DISCUSSION

Principal findings

This review found that women with diabetes predominantly undertake self-management during pregnancy for the health of their baby. Support networks are crucial in alleviating the burden that comes with managing a chronic condition, particularly a new one, such as gestational diabetes. When these networks are less effective, women may feel overwhelmed by the self-management, which is compounded by a lack of knowledge and understanding.

One of the most notable findings from this review was the lack of research dedicated to managing chronic conditions in pregnancy. Diabetes was the only condition represented in the included literature, but with only 16 papers eligible for inclusion, the qualitative evidence base around managing gestational or chronic diabetes in pregnancy is still thin. While the findings of this review are framed by the self-management challenges of diabetes, a number of generic activities are applicable across other chronic conditions. Self-management of diabetes (type 1, type II and gestational) includes self-testing (of blood glucose levels) and diet and exercise management, all of which are applicable more widely in pregnancy. However, it is clear there is a lack of specific research on other chronic conditions in pregnancy, such as hypertension. It is also worth noting that in the general population chronic conditions are self-managed due to the absence of a ‘cure’, but this is not strictly the case in pregnancy where conditions can be temporarily bounded by the pregnancy; gestational diabetes and hypertension (or pre-eclampsia) can be resolved with delivery, and if they are not resolved, they are recategorised as type 2 diabetes or hypertension²⁵—thus, they are no longer conditions brought about by pregnancy.

While some of the motivations and barriers identified in this review are applicable to chronic conditions in the general population, this review has also demonstrated that the motivating factors for pregnant women to self-manage are different to those motivating the general population; none more so than the desire to improve outcomes for the baby. As far as the authors are aware this paper is the first to use the burden of treatment theory as a theoretical lens to explore experiences of chronic disease management in pregnancy. Although this theory does not fully account for the specific challenges of pregnancy, as demonstrated by this review, it still broadly accounts for the actors and work involved in self-management in this context. Using this theory allowed for a deeper understanding of the burden of self-management and the work involved.

Interpretation

Acting for the baby

May *et al* argue that the work of self-management in the general population is often done in the context of ‘holding together something larger and more complex’,¹⁴ alluding to everyday life. While this applies in pregnancy, the work of self-management is also done in the context of maintaining the health of the unborn baby. Previous literature has touched on pregnant people acting ‘not for the self but also for the unborn ‘other’²⁶ and the burden of pregnant women having to be accountable for the health of their baby alongside their own health cannot be underestimated. Current self-management models are not equipped to consider that particular burden of treatment.

Support networks

Current self-management models emphasise that ‘self-management is manifested as both an individual and family construct’²⁷ and underscore the importance and necessity of social networks. The importance of social networks is also realised in the Burden of Treatment theory. May asserts that ‘knowledge and beliefs about health and healthcare are often shared [within social networks]...decisions about what to do, and how to access services, are often distributed amongst multiple participants in a social process’.¹⁴ In pregnancy, the sharing of lay knowledge and expertise is commonplace. Hinton *et al* demonstrated the nature of information sharing among pregnant people, often now in the form of online communities, in those with pregnancy hypertension or raised blood pressure.²⁸ Pregnant women with hypertension valued the advice and support of their peers, and in the online space peer advice tended to trump the advice of medical professionals.²⁸ Support networks are a central part of any self-management model in the general population, often emphasising that ‘self-management is manifested as both an individual and family construct’.²⁷ As both a barrier and a facilitator of self-management, it is evident family support is an important factor in continued adherence. While current self-management models do not accommodate pregnancy entirely, this review demonstrates that elements of existing models, such as social networks and the need for education around diagnosis, are applicable.

Strengths and limitations

The research question evolved throughout the search as it became apparent that little data on self-management in pregnancy existed, and none outside of diabetes management. This review should act as a call for further work. Lived experiences are often over looked in self-management literature and by using qualitative literature we have been able to address some of these research gaps.

Limitations include that the coding framework is constrained by how the original researchers interpreted the interviews and their interactions with patients. Distinguishing between pre-existing chronic conditions and

pregnancy acquired chronic conditions is important, but it was not a distinction that was reflected in the dataset; it is both a limitation of the included studies and this review. While the majority of the included papers were on gestational diabetes, there were two on pre-existing diabetes, and three with a mixed population of gestational and chronic diabetes. The burden of treatment theory does not perfectly map to pregnancy, however, elements of this theory are helpful in understanding how and why patients interact with self-management. Many of the included papers specifically considered barriers to self-management, as opposed to facilitators, thus potentially creating a negative bias towards self-management.

Included studies took place across a variety of international settings, operating within different health systems, ranging from those dominated by private insurance-based systems to those with national healthcare systems aimed at universal healthcare coverage. Individualised medicine is intertwined with self-management; six of the included studies took place in the USA, where they operate within an insurance-based system that lends itself to an individualised approach to medicine. With the exception of Canada, New Zealand and Singapore, none of the other countries included in this review have health systems based on almost near universal healthcare coverage. A patient’s relationship with their healthcare system also affects their relationship with the acceptability of self-management and their efficacy undertaking it. As none of the included studies were conducted in the UK, it raises questions about how pregnancy self-management would operate within the National Health Service.

CONCLUSIONS

Clinical implications

This review suggests there are several ways to improve adherence to self-management interventions in pregnancy, these interventions often involve self-monitoring and titrating medication. Healthcare professionals communicating the importance of self-management in terms that focus on the health of the baby, and educating women on the condition they have been diagnosed with, could have a positive impact on self-management adherence.

Research implications

There is a need for research on the self-management of chronic conditions in pregnancy, particularly in chronic conditions other than diabetes. There are ongoing trials on self-management in pregnancy, predominantly in hypertension, but how self-management will fit into usual care remains to be seen. Remote forms of care are now more commonplace, in light of this, a better, qualitative understanding of the new burden of treatment self-management creates is needed.

Main conclusions

This review shows that the primary motivating factor for women self-managing is the health of their baby. Their support networks and their understanding of the condition contribute to whether they self-manage effectively. The burden of treatment shifting to women requires further research, as patient work increases, feelings of anxiety can also increase. In this dataset, it was clear that some women found this treatment shift to be overwhelming but their anxiety largely stemmed from a lack of knowledge and understanding of the condition with which they had been diagnosed. Evidently, education is a barrier to pregnant women effectively self-managing, as when these issues are addressed women are willing and able to self-manage.

Contributors BEJ, KLT, LH, RJM and NR contributed to creating the research question and parameters of the review, including the search strategy. BEJ conducted the search with assistance from NR. BEJ and JK reviewed the titles and abstracts of identified articles and carried out the full text assessments. Disagreements on reviewed articles were resolved by consensus or discussion with KLT. Data extraction and complete analysis was conducted by BEJ and reviewed by KLT, LH and RJM. The write up was led by BEJ, with edits provided by KLT, LH and RJM. BEJ is the guarantor for this research.

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Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

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UNIVERSITY of York
Centre for Reviews and Dissemination

??? For those soon to register with PROSPERO, records may not be submitted between Thursday 1st April (5 pm) and Tuesday 6th (8 am) whilst staff are away and the university is closed for the Easter period. During this time you may still work on your record and save it for submission after Easter.

Systematic review

1. * Review title.

Give the title of the review in English

What are the current behaviours and attitudes among pregnant women regarding the self-management and self-monitoring of chronic conditions in pregnancy?

2. Original language title.

For reviews in languages other than English, give the title in the original language. This will be displayed with the English language title.

3. * Anticipated or actual start date.

Give the date the systematic review started or is expected to start.

01/04/2019

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

31/12/2019

5. * Stage of review at time of this submission.

Tick the boxes to show which review tasks have been started and which have been completed. Update this field each time any amendments are made to a published record.

Reviews that have started data extraction (at the time of initial submission) are not eligible for inclusion in PROSPERO. If there is later evidence that incorrect status and/or completion date has been supplied, the published PROSPERO record will be marked as retracted.

This field uses answers to initial screening questions. It cannot be edited until after registration.

The review has not yet started: No

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Review stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here.

6. * Named contact.

The named contact is the guarantor for the accuracy of the information in the register record. This may be any member of the review team.

Beth Jakubowski

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:

Ms Jakubowski

7. * Named contact email.

Give the electronic email address of the named contact.

bethany.jakubowski@phc.ox.ac.uk

8. Named contact address

Give the full institutional/organisational postal address for the named contact.

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

01865 617961

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

University of Oxford

Organisation web address:

<https://www.phc.ox.ac.uk/>

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11. * Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong. **NOTE: email and country now MUST be entered for each person, unless you are amending a published record.**

Ms Bethany Jakubowski. University of Oxford
Ms Jaspreet Khaira. University of Oxford
Professor Richard McManus. University of Oxford
Dr Katherine Tucker. University of Oxford
Dr Lisa Hinton. University of Cambridge

12. * Funding sources/sponsors.

Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

CLAHRC Oxford

Grant number(s)

State the funder, grant or award number and the date of award

13. * Conflicts of interest.

List actual or perceived conflicts of interest (financial or academic).

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country must be completed for each person, unless you are amending a published record.**

15. * Review question.

State the review question(s) clearly and precisely. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS or similar where relevant.

What are the current behaviours and attitudes among pregnant women regarding the self-management and self-monitoring of chronic conditions in pregnancy?

16. * Searches.

State the sources that will be searched (e.g. Medline). Give the search dates, and any restrictions (e.g. language or publication date). Do NOT enter the full search strategy (it may be provided as a link or attachment below.)

Research by MeSH used to find articles in PubMed

- Pregnant women MeSH
- Pregnant* OR gestational OR maternal
- Decision making MeSH
- Self-care MeSH
- Shared decision making OR self manag* OR self-monitor

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The search terms used for CINAHL

- Pregnancy OR Expectant Mothers
- Pregnant* OR gestational OR maternal
- Self-care
- Shared decision making OR self-manag* OR self-monitor

There was also a broad secondary search using the search term 'pregnancy self-management' in PubMed

17. URL to search strategy.

Upload a file with your search strategy, or an example of a search strategy for a specific database, (including the keywords) in pdf or word format. In doing so you are consenting to the file being made publicly accessible. Or provide a URL or link to the strategy. Do NOT provide links to your search **results**.

https://www.crd.york.ac.uk/PROSPEROFILES/136681_STRATEGY_20200916.pdf

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Do not make this file publicly available until the review is complete

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied in your systematic review.

This review is on the self-management of chronic conditions in pregnancy i.e. hypertension, diabetes, kidney disease. The scope of the review is to look at the feasibility and acceptability of women self-managing, and how they regard this new burden of treatment.

19. * Participants/population.

Specify the participants or populations being studied in the review. The preferred format includes details of both inclusion and exclusion criteria.

The population being studied is pregnant women with a chronic condition, there are no further restrictions on the study population.

Inclusion Criteria

1. Chronic condition: diabetes (gestational or chronic), hypertension (gestational or chronic), obesity, kidney disease, others to be reviewed as they come up
2. Pregnancy
3. Self-management: self-monitoring, self-weighing, self-care, others to be reviewed as they come up
4. Qualitative.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the interventions or the exposures to be reviewed. The

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preferred format includes details of both inclusion and exclusion criteria.

This review is looking at the self-management of chronic conditions in pregnancy. Self-management can be defined as self-monitoring (i.e. of blood glucose or blood pressure), or as action on the basis of self-monitoring (i.e. diet management, self-care, weight management).

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the intervention/exposure will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

Usual care if appropriate.

22. * Types of study to be included.

Give details of the study designs (e.g. RCT) that are eligible for inclusion in the review. The preferred format includes both inclusion and exclusion criteria. If there are no restrictions on the types of study, this should be stated.

Qualitative studies are eligible for inclusion, including secondary analysis of previous qualitative research.

Inclusion Criteria

1. Chronic condition: diabetes (gestational or chronic), hypertension (gestational or chronic), obesity, kidney disease, others to be reviewed as they come up
2. Pregnancy
3. Self-management: self-monitoring, self-weighing, self-care
4. Qualitative

23. Context.

Give summary details of the setting or other relevant characteristics, which help define the inclusion or exclusion criteria.

Chronic conditions in pregnancy are under researched, so the aim of this review is to examine the current qualitative evidence of the behaviours and attitudes towards the self-management of chronic conditions in pregnancy. It is important to determine what, if any, self-management currently takes place and whether women find it acceptable and feasible to self-manage. Therefore the inclusion criteria for this review is for the participant to have a chronic condition (i.e. hypertension, diabetes) during pregnancy (this can be defined as gestational or chronic), and for some form of self-management to be taking place. This self-management can either be self-monitoring (i.e. of blood glucose or blood pressure), or action on the basis of self-monitoring (i.e. diet management, self-care, weight management).

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

The study aims to explore whether self-management of chronic conditions in pregnancy is acceptable and

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feasible to pregnant women. It also aims to explore current practice and the current evidence base of chronic disease management in pregnancy.

Measures of effect

Please specify the effect measure(s) for you main outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

Not applicable.

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state 'None' or 'Not applicable' as appropriate to the review

None.

Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

Not applicable.

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

All of the studies identified in the search were screened independently by two reviewers (title and abstract) who then came together to agree on which articles should get a full text review. Both reviewers then independently completed the full text review and met again to agree on which articles should be included in the final review. Discrepancies were resolved by reviewing the definition of self-management and chronic condition as these were often the causes of uncertainty. The first author will then use a data extraction spreadsheet to list the key themes and findings from the papers. 10% of the included articles will be screened by another member of the study team, measuring the 10% of articles against the inclusion criteria and the COREQ quality assessment guidelines. The included studies will then be put into NVivo 12 and a thematic analysis, using the guidelines produced by Braun and Clarke (2006), will be carried out by the first author. A theoretical lens will be used to reflect the themes that emerge during data analysis.

27. * Risk of bias (quality) assessment.

State which characteristics of the studies will be assessed and/or any formal risk of bias/quality assessment tools that will be used.

Two researchers carried out the screening of articles, and met after the title and abstract screening to feed back results and decide which articles required a full text review. They met again following this screening to decide which articles should be included in the final review. To determine the quality of the studies, the COREQ guidelines will be used, which is a standard set of guidelines to determine the quality of qualitative work. The quality of the studies will be acknowledged in the write up, in order to be transparent about the

PROSPERO International prospective register of systematic reviews



quality of the work in this field to date.

28. * Strategy for data synthesis.

Describe the methods you plan to use to synthesise data. This **must not be generic text** but should be **specific to your review** and describe how the proposed approach will be applied to your data. If meta-analysis is planned, describe the models to be used, methods to explore statistical heterogeneity, and software package to be used.

Using NVivo 12, an initial thematic analysis will be conducted by the first author to create a coding framework of themes and sub themes. A theoretical lens will be used to develop the coding framework further.

Discrepancies will be discussed with the wider study team and feedback will be incorporated into the framework.

29. * Analysis of subgroups or subsets.

State any planned investigation of 'subgroups'. Be clear and specific about which type of study or participant will be included in each group or covariate investigated. State the planned analytic approach.

Not currently planned

30. * Type and method of review.

Select the type of review, review method and health area from the lists below.

Type of review

Cost effectiveness

No

Diagnostic

No

Epidemiologic

No

Individual patient data (IPD) meta-analysis

No

Intervention

No

Meta-analysis

No

Methodology

No

Narrative synthesis

No

Network meta-analysis

No

Pre-clinical

No

Prevention

No

Prognostic

PROSPERO
International prospective register of systematic reviews



No

Prospective meta-analysis (PMA)

No

Review of reviews

No

Service delivery

No

Synthesis of qualitative studies

Yes

Systematic review

Yes

Other

No

Health area of the review

Alcohol/substance misuse/abuse

No

Blood and immune system

No

Cancer

No

Cardiovascular

No

Care of the elderly

No

Child health

No

Complementary therapies

No

COVID-19

No

Crime and justice

No

Dental

No

Digestive system

No

Ear, nose and throat

No

Education

No

Endocrine and metabolic disorders

No

PROSPERO
International prospective register of systematic reviews



Eye disorders

No

General interest

No

Genetics

No

Health inequalities/health equity

No

Infections and infestations

No

International development

No

Mental health and behavioural conditions

No

Musculoskeletal

No

Neurological

No

Nursing

No

Obstetrics and gynaecology

No

Oral health

No

Palliative care

No

Perioperative care

No

Physiotherapy

No

Pregnancy and childbirth

Yes

Public health (including social determinants of health)

No

Rehabilitation

No

Respiratory disorders

No

Service delivery

No

Skin disorders

No

Social care

PROSPERO

International prospective register of systematic reviews



No

Surgery

No

Tropical Medicine

No

Urological

No

Wounds, injuries and accidents

No

Violence and abuse

No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.

English

There is not an English language summary

32. * Country.

Select the country in which the review is being carried out. For multi-national collaborations select all the countries involved.

England

33. Other registration details.

Name any other organisation where the systematic review title or protocol is registered (e.g. Campbell, or The Joanna Briggs Institute) together with any unique identification number assigned by them. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

If the protocol for this review is published provide details (authors, title and journal details, preferably in Vancouver format)

Add web link to the published protocol.

Or, upload your published protocol here in pdf format. Note that the upload will be publicly accessible.

No I do not make this file publicly available until the review is complete

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Do you intend to publish the review on completion?

Yes

Give brief details of plans for communicating review findings.?

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We will aim to publish the review in a high impact scientific journal.

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords help PROSPERO users find your review (keywords do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Pregnancy; maternal health; chronic conditions; self-management

37. Details of any existing review of the same topic by the same authors.

If you are registering an update of an existing review give details of the earlier versions and include a full bibliographic reference, if available.

38. * Current review status.

Update review status when the review is completed and when it is published. New registrations must be ongoing so this field is not editable for initial submission.

Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

Provide any other information relevant to the registration of this review.

40. Details of final report/publication(s) or preprints if available.

Leave empty until publication details are available OR you have a link to a preprint (NOTE: this field is not editable for initial submission). List authors, title and journal details preferably in Vancouver format.

Give the link to the published review or preprint.

Appendix 1: Search Strategy

Two databases were searched, CINAHL and Pub Med. The search terms used to find articles in Pub Med (n=107) were MeSH terms ‘pregnancy,’ ‘pregnant women,’ ‘decision making,’ ‘self-care,’ and ‘pregnan* OR gestational OR maternal’, and ‘shared decision making OR self manag* OR self-monitor’. There was also a broad secondary search in Pub Med using the search term ‘pregnancy self-management’ which identified a further 1,931 articles for review. The search terms used for CINAHL (n=707) were ‘pregnancy OR expectant mothers’, ‘pregnan* OR gestational OR maternal’, ‘self-care’, and ‘shared decision making OR self-manag* OR self-monitor’. This identified a total of 2,745 articles, which when controlled for duplicates left 2,695 for review. 25 articles were identified for full text review, of which 16 were selected for the systematic review.

Title	Author information				Study design				Methodological quality													
	Interviewer/Participant	Credentials	Occupation	Experience and training	Relationship established	Participant knowledge of the interview/interviewer characteristics	Methodological orientation and theory	Sampling	Method of approach	Sample size	Non-participation	Setting of data selection	Presence of non-participants	Description of sample	Interview guide	Repeat interviews	Audio/visual recording	Field notes	Duration	Data saturation	Transcripts returned	
Self-monitoring lifestyle behaviour in overweight and obese pregnant women: qualitative findings	First author	Author 1: DNG, MPH, PhD, RN, FAAN; Author 2: PhD, RN, FAAN	Author 1: Associate Professor; Author 2: Researcher	First author: Expert in prenatal health promotion and content analysis. Second author: PhD, undergraduate degree in exercise science, experience in a home visitation programme for low-income pregnant women	First author called or e-mailed each woman 3-7 days before a scheduled interview	Not mentioned - assumed through recruitment	No bias reported	Self-monitoring theory, behavioural and lifestyle change theories	Purposive	Interview explained to trial participants and informed consent sought	12 women enrolled in the intervention, 9 refused interview	10 interviewed in clinic private rooms, 2 were phone	No	Mean age 29.5 years, majority Chinese, majority were African American (7%), minority were Hispanic/Latino (6%), most educated to high school degree level, most multiparous, all diabetic	Yes	No	Audio	No	30 minutes	Not discussed	No	
"Was tired of all the walking and parking": Identifying Barriers to Diabetes Self-Care Among Low-income Pregnant Women	Author 1 and 2	Author 1: MD, MPH, Author 2: MD, MPH, Author 3: MPH, Author 4: MPH, CDC, Author 5: MD, MPH	Author 1: Fellow in Maternal-Fetal Medicine; Author 2: Resident in OB/GYN at Northwestern; Author 3: Senior Research Coordinator at Northwestern; Author 4: Assistant Professor, Nurse in Maternal-Fetal Medicine; Author 5: Professor of OB/GYN at Northwestern	Extensive expertise in maternal-fetal medicine and research	Not mentioned	Were identified because they had GDM to know why the research was being conducted	No bias reported	Cognitive load theory	Purposive	As a clinic serving mostly low-income women, informed consent sought	24 women identified, 22 available, 12 included participation	Conducted in private	No	Mean age 28.5, African American (4), Latina (4), Native American (1), Asian (1). Most educated to high school degree level, most multiparous, all diabetic	Yes	Three interviews per person	Audio	No	30-60 minutes	Reached at 20	No	
The maternal experience of having diabetes in pregnancy	Not reported by author/analyst was present for all interviews and focus groups	Author 1: MD, Author 2: PhD, RN, PHN, FNP-BC, Author 3: PhD, RN, IBCLC	Not reported	Extensive expertise judging by credentials	Not mentioned	Recruitment flyers provided some knowledge of subject matter	No bias reported	Phenomenology	Convenience	Flyers distributed in healthcare provider offices	Not reported	Over the phone or in person	Yes, additional investigator to take field notes	Average age 40, mostly highly educated, no demographics reported	Yes	No - three were focus groups	Audio	Yes	Not reported	Not discussed	Some were to check participants views were representative	
Women's experiences of gestational diabetes self-management: a qualitative study	Not reported	Author 1: PhD	Associate Professor Midwifery	Not reported but has a PhD in a related field	Approached by researcher prior to interview to confirm interest	Recruited from diabetes clinic fitting criteria	No bias reported	Phenomenology	Purposive (blinded for review)	Women invited to participate if fitted criteria, approached by researcher if Diabetes Coordinator confirmed their interest	15	Not reported	20 phone interviews, one in interviewee's home, one focus group at the hospital clinic	Yes	No	Audio	No	Not reported	Not discussed	No		
Factors promoting diabetes self-care among low-income, minority pregnant women	Author 1 and 2	Author 1: MD, MPH, Author 2: MD, MPH, Author 3: MPH, Author 4: MPH, CDC, Author 5: MD, MPH	Author 1: Fellow in Maternal-Fetal Medicine; Author 2: Resident in OB/GYN at Northwestern; Author 3: Senior Research Coordinator at Northwestern; Author 4: Assistant Professor, Nurse in Maternal-Fetal Medicine; Author 5: Professor of OB/GYN at Northwestern	Members of the research team reported to have prior qualitative research experience and extensive interviewing training	Not mentioned	Were identified because they had GDM and at their first clinic visit so knew why the research was being conducted	No bias reported	Cognitive load theory	Purposive	Recruited at their first clinic visit for diabetes care	24 women identified, 22 available, 12 included participation	Conducted in private	No	Mean age 28.5, African American (4), Latina (4), Native American (1), Asian (1). Most educated to high school degree level, most multiparous, all diabetic	Yes, provided in article	Three interviews per person	Audio	No	30-60 minutes	Reached at 20	No	
Socio-cultural aspects of self-management in gestational diabetes	Author 1	Author 1: PhD student, Author 2: Assistant Professor	Author 1: PhD student, Author 2: Assistant Professor Nursing	PhD student	Not mentioned - secondary analysis	Not mentioned - secondary analysis	Not mentioned - secondary analysis	Phenomenology	Purposive	Women being treated for GDM were recruited	12	Not mentioned - secondary analysis	Not mentioned - secondary analysis	Age ranged between 21-38, most worked outside the home, most were married, one of first pregnancy and second pregnancies	Yes	Two interviews conducted per person	Audio	Not mentioned - secondary analysis	Not mentioned - secondary analysis	Not mentioned - secondary analysis	Not mentioned - secondary analysis	
Women's experiences of factors that facilitate or inhibit gestational diabetes self-management	Author 1	Not reported	Not reported	Not reported	Access to women facilitated by diabetes coordinator, no relationship pre-established with researcher	Recruited through diabetes clinic and by diabetes coordinator so would have been told what the study was about	No bias reported	Interpretive phenomenology	Purposive	Diabetes coordinator approached women, participants were recruited after they attended GDM education and had at least 3 weeks self-management of condition	10 women met inclusion criteria, 10 agreed to participate, 10 included in study	Focus group in private room in clinic, phone interviews, face to face interview at one woman's home	No	Age range 23-40, education level lower than population average, one of about background, majority of women pregnant	Not reported	No	Audio	No	Not reported	Not mentioned	No	
Lived experience of blood glucose self-monitoring among pregnant women with gestational diabetes mellitus: a phenomenological research	Not reported	Author 1: PhD, RN, Assistant Professor of Nursing, Author 2: PhD, RN, Associate Professor of Nursing	Author 1: Assistant Professor, Author 2: Associate Professor	Not reported	Prolonged engagement was carried out by researcher to build a rapport with participants before interviews	Participants approached by staff nurses so knew what the study was about prior to taking part	No bias reported	Phenomenology	Purposive	Approached at antenatal care clinics and informed consent obtained	30	Not reported	Interviewed at the antenatal clinic, diabetes clinic or diabetic ward	The mean age of participants 32.5 years, 17 women were of Chinese ethnicity, 13 were Black, majority multiparous and employed	Yes	Two interviews conducted per person	Audio	No	45-60 minutes	Data were collected (see data saturation letter in manuscript)	No	
Living with gestational diabetes in a rural community	Not reported	Author 1: DNP, APRN-C, Author 2: PhD, WHNP-C	Author 1: Visiting Assistant Professor of Nursing, Author 2: Visiting Assistant Professor	Not reported	Established through recruitment	Had diagnosis of the disease which was being explored in interviews, and recruited via study posters	No bias reported	Phenomenology	Purposive and snowball	Information about study posted in obstetrics and health care provider offices in New York State	30	Not reported	Interviewed in person or at phone	All women Caucasian between 25-40. All had history of gestational diabetes	Follow up interviews conducted with four participants	No	No	15-30 minutes, second interviews 15-30 minutes	Checked by sharing copy of transcripts with participants	Transcripts of first interview provided to participants during a second interview for verification		
"Is gestational diabetes a severe illness?": Exploring beliefs and self-care behaviour among women with gestational diabetes living in a rural area of the south east of China	Author 1	Author 1: M, MSc, Author 2: PhD, Author 3: RN, PhD	Author 1: Lecturer of maternal care and midwifery	Not reported	Not mentioned	Interviewer did not know participants prior to study, was not part of the clinical care team	No bias reported	No specific theoretical framework reported	Purposive	Women purposefully recruited from diabetic clinics and words at a surgical hospital	12	Not reported	Interviewed in a room at the hospital	27.5 median age, the women high educational level, low educational level	Yes and provided in paper	No	Audio	No	60-90 minutes	Not mentioned	No	
Experiences, perceptions and self-management of gestational diabetes in a group of overweight multiparous women	Not reported	Not reported	Not reported	Not reported	Interviews conducted by experts in ethnography and social psychology	Established through recruitment and screening process	Women were given a health questionnaire prior to recruitment	Phenomenology	Purposive	Women recruited through Department of diabetes, given questionnaire and selected based on the questionnaire results	5	Not reported	Not reported	Not reported	Not reported	No	Audio	Yes	30 minutes	Not mentioned	No	
Ethnic Differences in Dietary Management of Gestational Diabetes Mellitus: A Mixed Methods Study Comparing Chinese, Chinese Immigrants and Australian Women	Not reported	Author 1: MSc, PhD, Author 2: PhD, Author 3: MD, Author 4: PhD	Author 1: MSc, PhD, Author 2: PhD, Author 3: MD, Author 4: PhD	Not reported	No	Were identified because they had GDM to know why the research was being conducted	No bias reported	Symbolic interactionist framework and grounded theory	Purposive	Women recruited through GDM clinics	41	11 declined to participate and reasons were given	Not reported but some on the phone (others in person)	Reported in table	Yes	No	Audio	Yes	45-90 minutes	Not mentioned but large sample size so assumed there was saturation	No	
Self-management of gestational diabetes among Chinese migrants: A qualitative study	Chief Investigator	Not reported	Facilities reported	CI was fluent in English, Mandarin and Cantonese	Participants had interviewer's second dialect	Interested participants were provided with written information that explained the background of the study and provided the contact details of the researcher, all participants were recruited after they had received diabetes education from a diabetes educator and had at least two weeks of self-management experience	No bias reported	Thematic analysis	Purposive	Between August and October 2010, participants were purposefully recruited from the antenatal clinic at the first in the lower West Region of Sydney, Australia. Bilingual flyers about the study were distributed at the clinic. Interested participants were provided with written information that explained the background of the study and provided the contact details of the researcher.	10	Not reported	The interviews were conducted by the chief investigator in either a staff meeting room or a waiting room at the hospital, according to the participant's preference.	Yes, participant's partner or someone in interview	No	Audio	No	Not reported	Not reported	No		
The experience of gestational diabetes for Indigenous Māori women living in rural New Zealand: qualitative research informing the development of debriefing interventions	Not reported	Not reported	Facilities reported	Not reported	Used researcher to participate ahead of the interview	The contact details of all consenting participants were then provided to the lead researcher, who contacted participants via phone or home visit (when no phone service was available). The lead investigator provided detailed information about the research, answered any questions from women and discussed written informed consent and confidentiality agreements (including accessing their diabetes-related health data from the GDM for research purposes)	No bias reported	Kawapa Maori Methodology	Purposive - in sub-sample a larger study	The ten participants advised that they either had a clinical history of GDM (n=4) or had been exposed to diabetes in pregnancy (n=2). Eight participants were recruited at the first primary care clinic between September and December of 2015.	10	Reported in the larger study (D)	Interviews undertaken in participants' homes at the health centre, or a mutually agreed venue	No	10 Māori women aged between 30 and 40 years. Cultured in full Māori, participants had diverse genetic backgrounds and current diabetes-related health conditions	Yes	No	Audio	No	Not reported	Not discussed	Participants were invited to review, with the possibility of conducting additional interviews, if necessary
"Diabetes just tends to Take Over": Experiences of Support and Barriers to Diabetes Management for Pregnancy among Urban South Chinese	Not reported	Not reported	Not reported	The main interview had a background in health psychology and skills in motivational interviewing	Potential participants could indicate interest by contacting the investigator. Study procedures and the consent process reviewed with them.	Interested participants were recruited from the purpose of the study was to identify barriers to and support for blood glucose management beyond pregnancy	No bias reported	Thematic analysis	Purposive	Participants were recruited using advertisement flyers that were sent for distribution to diabetes specific clinics around the United States. Adult U.S. women (24 years of age) with type 2 diabetes who were fluent in English and were either pregnant, planning pregnancy for the immediate future, or had experienced a previous pregnancy were contacted to participate in a phone interview.	27	27 indicated interest	Decided to conduct the interview over the phone unless participants were local to the study site and wished to come to the study office	No	All participants were married, with a mean age of 34 years and a mean duration of type 2 diabetes of 21 years. Two participants used a continuous glucose monitoring system, and 15 used an insulin pump to manage their diabetes. Ten women had previously been pregnant, three were pregnant at the time of the interview, and five were trying for or contemplating pregnancy in the immediate future (within 3-4 months from the time of their interview)	Yes	No	Audio	Yes - notes and reflections recorded by interviewee	Between 30 and 60 minutes	To achieve data saturation, 20-25 people were recruited, with the possibility of conducting additional interviews, if necessary	No
Barriers to Gestational Diabetes Management and Perceived Interventions for Women With Gestational Diabetes in Singapore Mixed Methods Study	First and second author	Author 1: PhD, Author 2: MPH, Author 3: MPH, Author 4: MBS, MD, Author 5: MBS, Author 6: PhD	Facilities reported	Not reported	Established through recruitment	Recruited from diabetes clinic fitting criteria, recruited from diabetes clinic subject to availability of a previously participating in a survey on the same topic	No bias reported	Thematic analysis	Purposive	Potential participants for the survey (this is a mixed methods study) were recruited to diabetes specific clinics around the United States. Adult U.S. women (24 years of age) with type 2 diabetes who were fluent in English and were either pregnant, planning pregnancy for the immediate future, or had experienced a previous pregnancy were contacted to participate in a phone interview.	15	Of the 15 patients who completed the survey, 15 were approached to participate in the interview and 15 participated in the interviews	Most interviews were conducted at the health care facility or at the participants' homes, in a private space conducive for the interview to three thoughts if necessary	No	The women who participated in interviews had a mean age of 34 years and a mean duration of type 2 diabetes of 21 years. Two participants used a continuous glucose monitoring system, and 15 used an insulin pump to manage their diabetes. Ten women had previously been pregnant, three were pregnant at the time of the interview, and five were trying for or contemplating pregnancy in the immediate future (within 3-4 months from the time of their interview)	Yes	No	Audio	No	Not reported	Reported at 15	No

Methodology		Data collection		Data analysis		Reporting		Quality		Comments
Number of data coders	Description of coding tree	Description of themes	Software	Participant checking	Quotations presented	Data and findings presented	Clarity of major themes	Clarity of minor themes	Quality Assessment	
2	Yes	Themes derived from data	N/A	No	Yes in full quote table by theme and sub theme	Yes	Clear	Clear	Medium	Small sample size, short interviews. However themes were clear and recruitment process was transparent
2	Yes	Themes derived from data	ATLAS.ti 8	No	Yes in full quote table by theme and sub theme	Yes	Clear	Clear	High	Despite small sample size, multiple interviews allowed for a richer dataset.
2	Not reported	Themes derived from data and then refined based on existing evidence of topic	N/A	Yes	Some reported, not quote table	Yes	Clear	Clear	Medium	Small sample size, even though focus groups tend to be better with a smaller sample size. CRs was still quite low and does not allow for a rich data set and exploration of themes
2	No	Themes derived from data	N/A	No	Yes with a quote table	Yes	Clear	Clear	High	Good sample size, clear discussion of themes and recruitment
2	Yes	Themes derived from data	ATLAS.ti 8	No	Yes in full quote table by theme and sub theme	Yes	Clear	Clear	High	Despite small sample size, multiple interviews allowed for a richer dataset.
2	Yes	Themes derived from data	Not mentioned	Not mentioned: secondary analysis	No quote table, in text quotes included	Yes	Clear	Clear	Medium	A good sample size for a secondary analysis, but more information on primary data collection needed for transparency
2	Yes	Themes derived from data	Not mentioned	No	No quote table, in text quotes included	Yes	Clear	Clear	High	Good sample size and mixed qualitative methods, leading to an apparently rich dataset. Paper was clear.
2	Yes	Themes derived from data	Not mentioned	No	No quote table, in text quotes included	Yes	Clear	Clear	High	Good sample size, rich dataset and exploration of themes. Clear paper.
Not reported	No	Themes derived from data	Not mentioned	Yes participants were informed of core themes for member checking and saturation verification	No quote table, in text quotes included	Yes	Clear	Clear	Medium	Small sample size, but the discussion of themes was nuanced and rich. The interviews were also reported as being quite short.
Not reported	No	Themes derived from data	Not mentioned	No	No quote table, in text quotes included	Yes	Clear	Clear	Medium	Good sample size with rich, longer form interviews. Clear paper and recruitment process clearly explained.
Not reported	No	Themes derived from data	ATLAS.ti 5	No	No quote table, in text quotes included	Yes	Clear	Clear	Low	Very small sample size, potentially too low to make any assumptions about experiences of self-management
48 hours 2	No	Themes derived from data	Novo 11	No	Yes and quote tables included	Yes	Clear	Clear	High	Very large sample size, very rich dataset, clear paper and all processes communicated well
2	No	Themes derived from data	Not mentioned	No	Yes, embedded in article	Yes	Clear	Clear	High	Good sample size, clear paper and clear recruitment and analysis processes described
The lead researcher independently coded the data, and discussed the codes and themes with her experiences through follow-up interviews, who had access to the interview data	No	Themes derived from data	Not mentioned	Participants were invited to review, edit or change their transcript prior to data analysis.	Yes, embedded in article	Yes	Clear	Clear	Medium	Small sample size, but an exploratory study and acknowledged it was a sub set of women who are rarely interviewed about their experiences.
Each transcript reviewed and coded independently by two researchers	Yes	Themes derived from data	Not mentioned	No	Yes, embedded in article	Yes	Clear	Clear	High	Good sample size, clear description of analysis process and themes very clear and supplemented with quotes
2	Yes	Themes derived from data	Atlas.ti	No - but transcripts checked by an author for accuracy	Yes but quote table not included	Yes	Clear	Clear	Medium	Based on the qualitative interview plus the sample size is small. However, there was rich discussion of themes and analysis was rigorous.