



The nutrition-related information seeking behaviours and attitudes of pregnant women with a high BMI: A qualitative study



Catherine R. Knight-Agarwal*, Rebecca Cubbage, Roslyn Sesleja, Madeleine Hinder, Rebecca Mete

Discipline of Nutrition and Dietetics, Faculty of Health, University of Canberra Hospital, PO Box 11, Woden ACT 2607

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ABSTRACT

Background: The prevalence of high body mass index is increasing amongst women of child bearing age. High maternal body mass index has ramifications for both mother and baby including increased health risks from gestational diabetes mellitus, caesarean section and stillbirth. Despite the increasing prevalence of high maternal body mass index little is known of the experiences of these women regarding nutrition information access and use during the antenatal period.

Methods: A qualitative study using individual interviews was undertaken at a tertiary hospital in south-eastern Australia. Twenty-Eight women with a body mass index ≥ 30 kg/m² participated. Interviews were audio recorded, transcribed, cross-checked for consistency and entered into a word processing document for further scrutiny. Data was analysed using interpretative phenomenological analysis (IPA). In any phenomenological study the researcher's objective is to elicit the participant's views on their lived experiences.

Findings: Three major themes emerged: (1) Nutrition-related information attainment; (2) Nutrition-related information management; (3) Nutrition-related information needs and wants.

Conclusion: The findings from this study may assist the future development and dissemination of nutrition-related information for pregnant women with a high body mass index. Women want more individualised support regarding nutritional requirements during pregnancy.

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Statement of significance

Problem or issue

Poor nutrition is a major contributor to the high body weight epidemic. Pregnancy is an ideal time to assist women with a high body mass index (BMI) make healthier lifestyle choices.

What is already known

Women in pregnancy are confused about what they should and should not eat for the short and long-term health of both themselves and their unborn baby.

What this paper adds

This Australian research highlights maternal concerns specific to areas for improving nutrition-related information access and education for pregnant women with a BMI over 30 kg/m².

1. Introduction

High pre-pregnancy BMI has become a very important challenge in antenatal care increasing both maternal and foetal risk.^{1,2,3} Maternal high body mass index has been shown to increase the risk of caesarean section,^{1,2,4} venous thromboembolism,⁵ postpartum haemorrhage,⁶ longer hospital stays, premature birth,^{1,7,8} and stillbirth.⁹ Women with elevated pre-pregnancy body weight, and who experience gestational diabetes mellitus (GDM), have a 70% chance of developing type II diabetes within 15 years of child birth.⁵ Excess gestational weight gain

* Corresponding author.

E-mail address: Cathy.Knight-Agarwal@canberra.edu.au (C.R. Knight-Agarwal).

(GWG) is associated with increased BMI after pregnancy, which raises the risk of developing chronic disease for women in later life.^{10,11} Prevention of excess weight gain is important at every stage of the lifecycle however pregnancy has been recognised as an ideal time to encourage long-term lifestyle changes in those who require them.¹² It is a life stage that offers ‘double-impact’ for optimising maternal and neonatal health. It is a life stage where motivation is high and where health system engagement is strong.^{13,14} Antenatal care may have much potential to promote healthy dietary habits in women.¹⁵

In a United States (US) qualitative study by Bloomington et al. pregnant women, of all BMI's, commonly reported accessing ‘outside sources’ of nutrition information in addition to advice provided by health professionals.¹⁶ However, it was noted that most women in this study admitted concern about the reliability of ‘outside sources’ namely pregnancy books, magazines and the internet.¹⁶ A British qualitative study explored pregnant women’s nutrition-related beliefs.¹⁷ Participants felt that midwives gave detailed information on what they should not be doing during pregnancy and rarely provided dietary information about what they should be doing to prevent excess GWG and optimise health. To overcome this gap in advice, the women reported using information from a variety of sources which they ‘filtered’ using their own judgement.¹⁷ Smart-phones are widely used by women of childbearing age resulting in the potential to take over some aspects of maternity care such as the provision of nutrition-related information.¹⁸ An Australian online survey, completed by 410 pregnant women, investigated how Australian women use and view antenatal and postnatal related applications (apps). The authors reported that almost three quarters of respondents had used at least one pregnancy app and half reported using at least one parenting app.¹⁹

Nutrition-related information is important to many women, particularly women with a high BMI, some of whom are mindful of not putting on excess weight during pregnancy.¹⁷ The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) recommend that antenatal clinics provide women with information on (or referrals to) support services such as dietetics when appropriate.²⁰ However, previous qualitative research conducted by the lead author of this study provides evidence that such recommendations may not be taking place.²¹ The aim of this study was to investigate the nutrition-related information seeking behaviours and attitudes of pregnant women with a high BMI.

2. Method

2.1. Design

Qualitative research is used to gain an understanding of an individual’s underlying opinions, motivations, actions and thoughts. The researchers consider reality to be socially constructed and aim to produce subjective findings through a process of inductive reasoning.²² Rather than setting up a series of hypotheses, the research presented here has been guided by a semi-structured interview guide that focuses on the examination of experience which suggests a phenomenological course of enquiry is appropriate.²³ Interpretative phenomenological analysis (IPA) is rooted in phenomenology, that is, it is concerned with individuals’ lived experience and how they make sense of that experience.²²

2.2. Setting

The study hospital is the largest public health facility in the region, supporting a population of almost 540,000 with approximately 3700 births per annum.²⁴

2.3. Participants

Purposive sampling requires that individuals are deliberately selected with an explicit purpose in mind, namely to address the research aim and because they are rich sources of data in relation to this. The participants in this study were selected based on their personal characteristics (e.g. weight status, pregnant), their experience of a specific issue (e.g. antenatal nutrition-related information) and their behaviour (e.g. nutrition-related information seeking).²² All women attending the hospitals antenatal clinic were approached by one of the research interviewers and provided with information about the study. For those women who expressed interest in participating, permission was requested to ask the following questions *What is your height? What is your weight? What is your date of birth and what is your due date?* The research interviewer then calculated BMI and analysed all questions to determine eligibility. Inclusion criteria included a BMI of ≥ 30 kg/m², aged 18 years or older and gestation of ≥ 12 weeks. Women who met the study criteria and agreed to be interviewed provided signed consent and were given a unique identifying number to ensure anonymity.

2.4. Procedure

A semi-structured interview guide was developed by the research team based upon a review of the published literature.^{25,26,27} All four interviewers attended training on interview techniques to ensure a standardised process was followed. This was conducted by the lead, CRKA, who is an experienced qualitative researcher. Interviews were conducted between August and December 2014 in the study hospitals antenatal clinic. Participants elected a time for the interview that was convenient for them. The majority of questions were kept deliberately open providing cues for participants to talk with a minimum of interruption and without judgement. A facilitatory interview style was employed which included the use of verbal and non-verbal cues. Each interview was audio recorded and transcribed verbatim and then entered into a word processing document for analysis.

2.5. Data analysis

Ethical approval to conduct this research was received from the relevant university and health sector human research ethics committee’s (No: ETH.6.11.124).

2.6. Data analysis

Transcripts were coded in detail to single out recurring patterns and quotes were given a unique qualifier to identify each participant.²⁸ This process was undertaken iteratively in addition to ongoing discussion between all researchers to ensure rigour of findings and to determine the point at which data saturation was achieved. This process also served as an important means of triangulation and, as a result, the final set of superordinate themes was decided on.²²

3. Results

Twenty-eight women, all with a self-reported pre-pregnancy BMI of ≥ 30 kg/m², of various parities, took part in the study. Three super-ordinate themes were determined, and results are described under these themes with quotes to illustrate the findings (see Table 1).

3.1. Nutrition-related information attainment

Pregnancy is a time of vast change with a plethora of information available. Most participants expressed the view that

Table 1
Themes, codes and representative quotes.

Themes	Codes	Examples of supporting quotes
Nutrition-related information attainment	Antenatal care	<i>"(I received) you know, just general (verbal) advice but not anything specific" (W5).</i>
Nutrition-related information management	Outside sources	<i>"I did have a look on the internet at one point, doctor google was really helpful" (W9).</i>
	Food safety or healthy choices?	<i>"things like takeaways um, pre-made sandwiches and stuff like that we can't have salads, it makes healthy options hard, when you're at work and you've got no lunch" (W2).</i>
Nutrition-related information needs and wants	Conflicting information	<i>People were saying a glass of wine is not going to do anything " (W8).</i>
	All women are different	<i>"I think they just assume you know. Which is, probably, not necessarily completely true because it has been 16 years since I had my last pregnancy, so it's like my first pregnancy again . . . things change" (W13).</i>
	Individual care	<i>"(To be given) ideas of what to eat and what an ideal diet for me should look like" (W4).</i>

the nutrition-related information they had attained was important to utilise during pregnancy. They were aware that food intake (and nutrients these foods contained) influenced the growth and development of their unborn child, as one participant declared:

"You are not just looking after you, it's about the other life you are creating, so you need to make sure that they are getting everything that they need, you know, they can't do that themselves" (W1).

There was acknowledgement that good dietary habits play an important role in maternal health both during and after pregnancy as one participant stated: "(Nutrition is not only for) the health of the baby but to manage future problems as well" (W2) and another made the comment: "considering the constipation we get, nutrition is something we need to know about . . . and weight (gain too)" (W3). There was a wide spectrum of responses regarding the amount and type of nutrition-related information provided to participants by health professionals. Some had not experienced any nutrition-related conversations with their doctor or midwife but had received pamphlets "from the food safety council" (W5) as part of their first hospital antenatal visit. Some acquired "you know, just general (verbal) advice but not anything specific" (W5). Whereas, others had experienced the exact opposite with one participant exclaiming: "My doctor is always on me to make sure, you know, I don't eat too much crappy food . . ." (W6). Participants were asked if they had or would be attending antenatal classes and one woman replied: "With my previous pregnancies, yes (I did)" (W2). However, when asked if nutrition-related information had been provided as part of the classes she responded: "Um, jeez, I don't know, I honestly can't remember . . ." (W2). Another participant did not remember a specific nutrition component to the classes they had attended: "I don't think there was (nutrition or weight gain advice), there was physio, but I don't think there was an actual nutrition section" (W7).

Participants acknowledged attainment of nutrition-related information outside of the hospital environment even if such information was unwanted or un-asked for. The general feeling from participants was that everyone has an opinion regarding nutrition in pregnancy. Common sources of information reported were family and friends as one participant stated: "Yeah, I wouldn't be asking my mother for information that's for sure!" (W3), and another made the comment: "Does mother's advice count? Does your friends and colleagues count? . . . coz I'm afraid they'll say oh you can't have those anchovies anymore" (W8). Participants felt that modern technologies, like the internet, made acquiring nutrition-related information quick and easy particularly regarding adverse nutrition-related pregnancy symptoms such as constipation or cravings, as one participant reflected: "I did have a look on the internet at one point, doctor google was really helpful" (W9), and another admitted: "If anything strange is happening I just google it" (W10). A growing area of reported information

attainment was the use of smartphone applications with one participant making the comment: "I've got the 'what to expect' app on my phone, so that tells me some things tells me what's going on and good things to do (and eat) for the weeks that you're at" (W11). Conversely, some participants were apprehensive, and even fearful, about obtaining nutrition-related information from the worldwide web and questioned the credibility of accessing advice in this way: "We've been told not to (access the internet) . . . I don't, because it scares me" (W3) and another made the comment: "(The best source of nutrition-related information is) obviously your medical professionals, you can never really trust what you read online" (W1). Participants recognised that government endorsed nutrition-related information would be reliable but were not always sure what websites to visit: "I try to go to medical looking websites, like sorry I can't quite remember the acronym, but the national health medical research thingy that comes up a lot" (W12).

3.2. Nutrition-related information management

Participants managed nutrition-related information, whether acquired from health professionals, friends, family or the internet, in several different ways. When participants were asked about how they managed nutrition in pregnancy overwhelmingly their responses concentrated on what foods to avoid rather than what foods to consume. Most participants acknowledged that abstaining from alcohol was a national recommendation and that food safety was a top priority. Women identified the high risk 'listeria' foods to stay away from such as "soft cheeses, deli meat, raw eggs . . ." (W8) and " raw fish, seaweed, undercooked meat" (W4).

Participants reported apprehension in applying food safety advice when eating out while still recognising that healthy eating was important for their wellbeing and that of their unborn baby. Managing this situation was a quandary for many as nutritious options were often viewed as food safety risks. One participant expressed frustration regarding this issue:

"Well you know they say don't eat salads but every roll has salad on it and then it's like don't eat anything with chicken or salmon and everything has chicken and salmon and everything comes with aioli, which can have raw egg in it, and you are more or less left eating . . . high carb and fried foods because they are the only things that are suitable to eat so if you want to eat out your stuck not with healthy options" (W13). Another participant with GDM expressed similar difficulties: "things like takeaways um, pre-made sandwiches and stuff like that we can't have salads, it makes healthy options hard, when you're at work and you've got no lunch . . ." (W2). Nevertheless, some participants were forced to wade through conflicting nutrition-related information and manage their situation as they felt best as one participant stated:

"I've got a bunch of dietary restrictions already and it's just too hard to not have a sumo salad for lunch I'm gluten free

and I'm also fructose intolerant and I can't tolerate avocado or broccoli yeah and then I've got GDM as well, so at the moment my diet is fairly restricted. So yeah, when I am out and I look at those things and they say not to eat them because you're pregnant because it's a listeria risk or whatever, I just go no other option" (W12).

Processing and managing the nutrition-related information that was received from health professionals compared to other sources was, at times, confusing for participants. This confusion was further exacerbated by the fact that definitive answers to nutrition-related questions in pregnancy were not always available and that nutrition-related information from the internet was often different to what was advised by a health professional. One participant recounted a discussion regarding alcohol intake during antenatal classes she had attended:

"The midwife said stay away from it (alcohol) and then somebody piped up and said there's not proven research to say it is actually bad for the baby People were saying a glass of wine is not going to do anything"

3.3. Nutrition-related information needs and wants

The nutrition-related information needs and wants of participants varied and were largely dependent on health status, parity and previous experiences of the health service. Participants acknowledged that some nutrient needs change during pregnancy. However, they were not always able to articulate the types and quantities of food to consume to meet their current requirements. Some participants provided examples of nutritional needs that, they felt, were particularly important for a healthy pregnancy, as one participant stated: "Um, sorta dairy for calcium, I know you are supposed to have leafy greens for iron and any teas with added benefits such as that raspberry leaf stuff" (W1). Participants diagnosed with GDM reported being referred to or had attended a specialist clinic, with one participant stating: "It was very specific to GDM and then there was also just a bit of general healthy food pyramid (advice)" (W12). Participants with GDM reported receiving comprehensive support regarding the management of their condition: "Endocrinology gives us a lot of information about what's high and low GI [Glycaemic Index]" (W12). However, it was recognised that this information did not always cover other health needs such as gluten intolerance as one participant stated: "The hospital stuff is really useful but it's not necessarily always the most up to date, particularly with gluten free foods, like new foods that are out and that sort of thing" (W12). Interestingly, multiparous participants felt that midwives or obstetricians were not forthcoming with nutrition-related information as they had already experienced a previous pregnancy and, as a result, there was 'no need' for additional support. One participant made the comment: "I think they just assume you know. Which is, probably, not necessarily completely true because it has been 16 years since I had my last pregnancy, so it's like my first pregnancy again . . . things change" (W13).

Participants of this study expressed the desire for more nutrition-related information during pregnancy and recognised that antenatal care providers were well placed to give this with the following comments reflecting this view: "(I ask) my midwife" (W11) and "I trust my doctor . . . , so if I have any questions I ask them as I worry about what I read on the internet, some of it's just people's opinions and not fact" (W14). Other participants were keen to seek advice from a nutrition specialist: "a dietitian, as I have a special dietary history" (W15). Leading on from this, participants wanted more information regarding credible websites to access as there was acknowledgement that navigating the internet could be daunting and confusing: "I look up stuff . . . I don't really want to look up some random website, I want

something that is recommended and something that's Australian, sometimes what they recommend in America is different to what they recommend here" (W13). Some participants wanted advice that was tailored to their own, specific needs: "(To be given) ideas of what to eat and what an ideal diet for me should look like" (W4). Others acknowledged that pregnancy can be a difficult time with a vast amount of change. One participant made the comment: "I think there needs to be a more practical approach to (nutrition). I mean things like actual meal plans where you don't have to think, you've already got enough to think about"

4. Discussion

The findings from this qualitative exploration provide an important and useful insight into the perspectives of a group of Australian women with high BMI's and their nutrition-related information seeking behaviours during pregnancy.

Many participants in our study acknowledged that healthy eating during pregnancy is important not only for the growing baby but for the prevention of maternal ill health. In their qualitative investigation Szwajcer et al. reported that pregnancy leads women to experience an increase in nutrition awareness which may positively influence their future nutrition-related behaviours.²⁹ Evidence exists that information given by health professionals has more effect on women's dietary change than information obtained from other sources.^{30,31} However, in this study, the amount and type of nutrition-related information provided to pregnant women with a high BMI by health professionals varied considerably, an issue that has been reported elsewhere.³² A qualitative Danish study found that women with a high pre-pregnancy BMI revealed frustration that they were not given adequate nutrition-related information, particularly birthing risks associated with excess weight, as part of routine antenatal care.³³ Qualitative research by Lavender and Smith found that pregnant women with a high BMI expect health professionals to provide them with information on how to implement positive and sustainable lifestyle changes as part of routine antenatal care.³³ Participants in our study acknowledged that midwives and doctors are trusted sources of nutrition-related information. However, a recent review of the literature reported that the Australian accreditation standards for nursing and midwifery courses provide no content on nutrition.³⁵ Likewise, in the RANZCOG Integrated Training Program (which includes curriculum for registrars who are training for fellowship of the college) there is no specific module for nutrition or dietary management of women with high BMI in pregnancy.³⁶ Midwives and obstetricians may find benefit in collaborating with dietitians in the development of nutrition-related information that caters for the specific requirements of women with a high BMI. The need for dietetic intervention in the support and management of pregnant women with a high BMI has been reported previously but continues to be lacking in practice.³⁷

Women in our study were motivated to attend group education sessions through the hospital's antenatal clinic however they reported not being able to recall if the sessions contained a nutrition component or not. A US study by Anderson et al. found that if antenatal care providers failed to mention nutrition, appropriate GWG or referring to a weight-management specialist if appropriate then these women did not perceive such issues to be important.³⁸ Antenatal education classes are an opportunistic time to present nutrition-related information and an important forum for health professionals such as dietitians to provide expert advice that women continue to report they need and want.³⁷

Participants in our study expressed the desire for access to a variety of different nutrition-related information resources. The internet was commonly used as were pregnancy specific smartphone applications. In an Australian qualitative study, women were found to be overly reliant on the Internet to meet their nutrition-related information needs.³⁹ Women did not seem to critically evaluate the quality of information they accessed which was also apparent in our study.³⁹ Conversely, some participants in our study reported a lack of trust in the internet regarding pregnancy related nutrition information. Antenatal care facilities are in a prime position to support women to access evidence-based, nutrition-related information via a multitude of different sources e.g. print, electronic media, smartphone applications.

Regarding dietary intake during pregnancy, women in our study focused heavily on foods to avoid, particularly those they believe to contain *Listeria monocytogenes*, rather than foods to include. The authors acknowledge that listeria poisoning can result in serious consequences such as miscarriage or stillbirth. Nevertheless, cases of listeriosis in Australia are extremely rare (< approximately 0.02% of pregnancies per year).⁴⁰ Participants in our study reported that the most common type of nutrition-related information received during pregnancy related to food safety whether sourced from a health professional, family or the internet. Participants felt in a quandary about the food choices they should make during pregnancy, many of whom struggled to find a balance between food safety verses healthy food choices particularly in relation to meals purchased outside the home. Considering almost 20% of pregnant women in the area where the research was conducted have a BMI over 30 kg/m² (and who experience an increased risk of adverse birthing outcomes such as GDM, and caesarean section when compared to healthy weight women) a refocus of priorities should be considered.⁴¹ Pregnancy specific nutrient needs such as iron were highlighted in our study with some participants expressing the belief that raspberry leaf tea and green leafy vegetables are major sources of this important dietary element. Although green leafy vegetables contain iron the bioavailability is poor. In the Australian food supply, best sources of this micronutrient are red meat, meat-free alternatives (e.g. legumes) and fortified breads and cereals. A dietitian is the health professional best placed to advise pregnant woman regarding foods and food combinations to consume for optimum nutrition.

Woman-centred care focuses on each woman by acknowledging her individuality and unique position in the world. It recognises a woman's right to self-determination and aims to address her social, physical, psychological, spiritual and cultural needs and expectations.⁴² Participants in our study expressed a desire for more tailored nutrition-related information that satisfies both their needs and wants. Weight, dietary and nutrient requirements vary considerably from woman to woman. They are dependent on a range of variables including pre-pregnancy BMI and health status. Participants in our study reported that dietetic services for GDM were comprehensive and readily available. However, for those women who carry excess weight, and do not have GDM, the availability of individual dietary advice in their local public health system is limited. Antenatal classes tend to cater for women who have uncomplicated pregnancies and they focus on natural childbirth. Group classes do exist for specific conditions (such as next birth after caesarean section) but, as a rule, women with risk factors (for example high pre-pregnancy BMI) do not receive specialist dietetic advice at all.⁴³ This is an area of pregnancy care which may benefit from policy revision based on individual need. The findings from this study may assist the future development and dissemination of nutrition-related information for pregnant women with a high BMI. This was a small study conducted at one hospital. Nevertheless, that hospital is the major provider of antenatal services in south eastern Australia. We acknowledge that

the views of pregnant women with a high BMI who participated in the interviews may not reflect those of pregnant women elsewhere. The researchers were skilled in interview techniques, necessary to reduce interviewer bias and to ensure a standardised process was followed.

5. Implications for practice, policy and future research

The study identified several key issues from the women interviewed. Participants reported being exposed to conflicting nutrition-related information. Many struggled to follow a healthy diet while adhering to current food safety recommendations. Participants were quite vocal in their desire for reliable nutrition-related information that, more often than not, should be tailored towards the individual. The presence of a dedicated antenatal care dietitian may help to alleviate the fears and confusion women feel by providing consistent and credible nutrition advice.

The themes generated by this study could form a foundation from which to undertake further research and may assist in the development of nutrition-related information that is specific to the needs and wants of women with a high pre-pregnancy BMI.

6. Conclusion

The findings from this study may assist the future development and dissemination of nutrition-related information for pregnant women with a high BMI. Participants from our study want more individualised support regarding nutritional requirements during pregnancy. Ongoing collaboration between midwifery, obstetric and dietetic professionals is paramount if the nutrition-related needs and wants of women with high BMI are to be met. Extra resources in terms of staffing, specialised training and funding are required to achieve this.

Disclosure of interest

None declared.

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Ethical statement

- Name of the ethics committee
The ACT health human research ethics committee.
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