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Women and Birth

journal homepage: www.elsevier.com/locate/wombi



Original Research – Quantitative

Pregnancy nutrition knowledge and experiences of pregnant women and antenatal care clinicians: A mixed methods approach

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ARTICLE INFO

Article history:

Received 13 February 2017

Received in revised form 29 September 2017

Accepted 25 October 2017

Available online xxx

Keywords:

Pregnancy

Knowledge

Nutrition education

Antenatal care

Dietary guidelines

ABSTRACT

Background: Dietary intake of pregnant women do not appear to meet the dietary recommendations. Nutrition knowledge and practices of pregnant women and their antenatal care clinicians are factors that may be influential on dietary intakes of pregnant women.

Aim: To assess and compare pregnancy nutrition recommendation knowledge and to explore how nutrition knowledge impacts on food choices in pregnant women and nutrition education practices of antenatal care providers.

Methods: An explanatory sequential research mixed methods study design was applied. All participants were recruited from a metropolitan maternity hospital in Melbourne, Australia. The first phase assessed pregnancy nutrition knowledge and sources of nutrition information using a questionnaire (n = 202) then followed semi-structured interviews with women and clinicians (n = 31).

Findings: The clinicians obtained significantly higher nutrition scores than compared to women, however, nutrition knowledge gaps were highlighted for both women and clinicians. Women reported receiving limited nutrition advice, a reflection of the clinicians reporting they provided limited nutrition advice. **Conclusion:** A key challenge for women adhering to dietary recommendations was having inadequate knowledge of the dietary recommendations and receiving limited information from their care providers. Similarly, as well as time constraints, limited nutrition knowledge and a lack of nutrition training impacted on the capacity of clinicians to provide adequate nutrition education.

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Statement of significance

Problem

Poorer quality diets during pregnancy have been associated with adverse health outcomes for the mother and child. Nutrition knowledge of pregnant women and also nutrition knowledge and practices of women's antenatal care providers may be influential on the dietary intakes of pregnant women.

What is already known

Previous studies researching dietary guideline knowledge in Australian pregnant women and clinicians report limited

nutrition knowledge but they did not cover all major dietary guidelines relevant to pregnancy.

What this paper adds

The pregnant women and clinicians in this study had limited knowledge regarding healthy eating for pregnancy. Having limited nutrition knowledge impacted on the women's ability to implement the recommended dietary behaviour and was associated with the reduced the likelihood of clinicians providing nutrition advice.

1. Introduction

Despite the availability of pregnancy-specific healthy eating guidelines to guide dietary behaviour, dietary intakes of pregnant women do not appear to meet the recommendations.¹ Inadequate diets that lead to nutrient deficiencies are associated with birth

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<https://doi.org/10.1016/j.wombi.2017.10.010>

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defects and impaired growth and development: for example folate deficiency and spina bifida or cleft lip/palate²; iodine deficiency and cretinism and impaired brain development³; and iron deficiency and low birthweight.⁴ Poorer quality maternal dietary patterns have also been associated with infant birthweights of more than 4 kg⁵ and preterm birth.^{6,7} Foodborne illnesses have been linked to premature birth, pregnancy loss, impaired development and birth defects.^{8,9} Furthermore, a healthy diet during pregnancy has also been shown to play a role in preventing adverse health outcomes such as a reduction in preterm birth with the consumption of fish two or more times per week, and reduced risk of pre-eclampsia in women who consume higher intakes of fruit and vegetables.¹⁰ A healthy diet during pregnancy is also associated with a reduced likelihood of excess gestational weight gain.¹¹

What women choose to eat during pregnancy can be influenced by many factors. Nutrition knowledge has been associated with overall diet quality^{12,13} and is essential for behaviour change.¹⁴ Furthermore, the care pregnant women receive has also been found to influence positive lifestyle changes.^{15–18} Nutrition knowledge and practices, not only of pregnant women, but also of their antenatal care providers, may be influential on the dietary intakes of pregnant women. Primary prevention measures such as improving the nutrition knowledge of pregnant women could be a cost-effective approach to lower the risk of adverse health outcomes for the mother and infant.

Knowledge regarding a range of nutritional issues in pregnant women has previously been explored and published, but not all major dietary issues have been adequately researched. These issues include knowledge of the 2013 food group serving recommendations, energy requirements for pregnant women, high risk food sources of Salmonella, high mercury risk foods, as well as the associated health risk of consuming said contaminated foods. Australian pregnant women have been reported to have limited knowledge about when to take folic acid supplements and the food sources of folate,¹⁹ the need for and role of iodine in pregnancy,²⁰ recommended weight gain guidelines,²¹ core food group daily serving recommendations,²² and high Listeria risk foods.²³ In Australian antenatal care providers, knowledge of the recommended nutrient supplements,²⁴ core food groups,²⁵ pregnancy weight gain recommendations,²⁶ high Listeria risks foods²⁴ and alcohol recommendations²⁷ have been reported. Furthermore, there has been limited research published on how nutrition knowledge influences the food choices of pregnant women, or how the nutrition education practices of clinicians influences food choices of pregnant women.

This study aimed to assess, compare and contrast the pregnancy nutrition knowledge of, and sources of nutrition information used by pregnant women, midwives and obstetricians, and to explore the influence that nutrition knowledge has on dietary behaviour of pregnant women and/or nutrition counselling practices of midwives and obstetricians.

2. Methods

2.1. Setting

The study was conducted in a tertiary level metropolitan maternity hospital in Melbourne, Australia. The hospital recorded 8100 births in 2013/14.²⁸

2.2. Participants

Women were conveniently sampled from an eligible pool of approximately 2700 pregnant women attending the hospital for antenatal care. The inclusion criteria for women were the presence

of a singleton pregnancy and English language proficiency. Women with higher order pregnancies were excluded due to differences in nutritional recommendations.

Clinicians were conveniently sampled from an eligible pool of 270 midwives and obstetricians employed within the maternity services. The inclusion criteria for clinicians were current employment as a midwife, shared-care doctor, or obstetrician under the maternity services. Clinicians were excluded if they listed occupations other than the previously-mentioned professions or reported working under other specialties e.g. oncology or gynaecology.

2.3. Study design

Explanatory sequential research study design was utilised. It involved conducting the study in two distinct interactive phases. Explanatory sequential mixed methods answers the research question by conducting a quantitative phase of data collection using a questionnaire, followed by a qualitative phase, using interviews to help explore and explain the results of the quantitative data.²⁹ Furthermore, administering a structured questionnaire in isolation provides a set of standardised responses to assess knowledge, but does not adequately explore participant views or how knowledge influences behaviour or practice. Therefore, the first phase assessed nutrition knowledge, and was then followed by the second phase which explored the impact nutrition knowledge had on behaviour or practice.

2.4. Phase one: questionnaire

A 76 item questionnaire measured knowledge of: pregnancy nutrition recommendations; food sources of nutrients; healthy eating; energy intake; weight gain recommendations; recommendations about the intake of alcohol; and high risk foods. Demographic items such as gender, age, gestation, number of children, country of birth, and education attainment were requested. The questionnaire also included items regarding receiving or giving nutrition advice, and sources of information relied upon. Participants were asked to leave their contact details if they were interested in being contacted for an interview. The development and validation of the questionnaire has been described previously.³⁰ Test-retest reliability was high ($r=0.93$, $p<0.01$) and criterion validity was strong ($r_s=0.51$, $p<0.05$).

Pregnant women were recruited by the researcher and a research assistant from the waiting room for women attending pregnancy clinics from April until July 2014. A script was developed and used to introduce ourselves. Women were given an overview of the research study and were assured of their confidentiality and anonymity. Women verbally consenting to participate to the study were given a paper copy of the questionnaire to complete, with a pen and self-addressed envelope, and asked to return the completed questionnaire to the pregnancy care reception desk.

Clinicians were recruited through short presentations about the research study at pregnancy clinic meetings and staff handover meetings. Clinicians were informed that their responses to the questionnaire would be anonymous. Paper-based questionnaires were distributed with self-addressed envelopes to return completed questionnaires to the hospital's Nutrition department. Due to low responses rates and to enhance participation of clinicians, a weblink to an online version of the questionnaire was emailed to the pregnancy clinic Team Leaders who forwarded the email to their respective team of midwives and obstetricians approximately one week after attending staff meetings. In both groups consent was implied by completing the questionnaire. Recruiting of women and clinicians occurred between April and September 2014.

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