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2014

### Midwives and nutrition education during pregnancy: A literature review

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## Midwives and nutrition education during pregnancy: A literature review

### Abstract

**Objectives** This review explored the extent to which the role of midwives in nutrition education during pregnancy has been reported in the literature and areas requiring further research were identified. **Review method** A review of the literature was undertaken. Articles included in the review were published in English, in scholarly journals, and provided information about the knowledge, education, and attitudes of midwives towards nutrition during pregnancy. **Results and discussion** Few studies were identified. The included studies were exploratory and descriptive. Studies had reported that midwives lacked a basic knowledge of nutrition requirements during pregnancy. This might be attributed to inadequate nutrition education provided in both undergraduate and postgraduate midwifery programmes. The nutrition education components of midwifery courses were not identified within the studies reviewed. **Conclusion** Limited international or Australian research is available that reports on the role of midwives in nutrition education during pregnancy and the nutrition content of midwifery curricula. This represents an important omission in midwives capacity to support the health of pregnant women and their babies. More research is required to explore the educational needs of midwives to enhance nutritional care for pregnant women.

### Keywords

pregnancy, literature, during, review, midwives, education, nutrition

### Disciplines

Education | Social and Behavioral Sciences

### Publication Details

Arrish, J., Yeatman, H. & Williamson, M. (2014). Midwives and nutrition education during pregnancy: A literature review. *Women and Birth*, 27 (1), 2-8.

Elsevier Editorial System(tm) for Women and Birth  
Manuscript Draft

Manuscript Number: WOMBI-D-11-00056R4

Title: Midwives and nutrition education during pregnancy: A literature review

Article Type: Review Article

Keywords: midwives; nutrition; education; pregnancy; pregnant women; review.

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**Midwives and nutrition education during pregnancy: A literature review**

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**Keywords:** midwives; nutrition; education; pregnancy; pregnant women; review.

Word count: 187

## **Introduction**

Healthy children are the foundation of a healthy population. For children to enjoy this good health, healthy practices and care should start during (or before) pregnancy [1]. Good nutrition during pregnancy is one of the most significant components affecting both the health of the mother and the health and development of the fetus [2]. Poor quality diets during pregnancy have been found to be associated with maternal excess weight gain, pre-eclampsia, preterm birth or even miscarriage [3]. In addition, excess weight gain and imbalanced diet, particularly among obese women during pregnancy have been identified as risk factors for abnormal glucose tolerance [4].

Poor infant outcomes have also been linked with poor maternal nutrition. These include inadequate development, low birth weight and an increased risk of developing chronic diseases later in life [5]. Adult diseases proposed to have a fetal origin [6, 7] and linked with nutrition during pregnancy, include cardiovascular diseases [8], diabetes [9] and issues associated with bone mass formation [10]. These claimed links between chronic illnesses and fetal and maternal influences have been subject to active debate but have been confirmed by more recent reviews and studies [11, 12, 13, 14, 15].

Pregnant women show an increased awareness of nutrition status during their pregnancy. This has been attributed to their perception of the importance of nutrition as a change they can make in their everyday lives to protect the health of their babies [16]. In a study conducted in Australia, pregnant women were interested in receiving nutrition information during their pregnancy, especially information about healthy eating, weight management, vegetarian diet, breastfeeding, morning sickness and heart burn [5]. The pregnancy period represents a life experience for a woman that can impact on her current health and that of her fetus and can also generate nutrition awareness that may affect her nutritional behaviour in the longer term [17].

Women's increased awareness of nutrition during the pregnancy period may not be capitalised on by health care providers. Research suggests that pregnant women might not be receiving nutrition advice from their health care professionals during pregnancy [18]. In a study conducted with 190 pregnant women in antenatal clinics within two hospitals in NSW, Australian pregnant women reported a lack

of knowledge of long-chain omega-3 polyunsaturated fatty acids and they reported that their health-care professionals did not provide them with adequate information on the importance of eating foods high in long-chain omega-3 polyunsaturated fatty acids during pregnancy [19]. In the same study, books and magazines were reported to be the women's main source of information [19]. In part this may reflect shortcomings that have been found in the materials made available to pregnant women in Australia [18, 20]. Studies also have reported pregnant women's ignorance of the availability of education materials (even when provided to them) if health professionals did not act to emphasise the nutrition messages within such materials [21].

It has been established that nutrition education during pregnancy is associated with positive pregnancy outcomes [22, 23, 24]. Pregnant women report midwives as their trusted source of information and advice, as they perceive them to have the necessary expertise [16, 21]. This view of midwives influencing maternal and infant health outcomes through advice and care is reflective of the concepts of primary health care [25]. In this way, midwives should be considered to have an impact on the health of the community [26].

The role of midwives in nutrition education during pregnancy is being increasingly recognised. In 2008, the National Institute of Health and Clinical Excellence (NICE) in the United Kingdom issued recommendations for health professionals (including midwives) to provide women during pregnancy and pre-conception with nutrition support and advice [27]. In Australia, the only available guidelines are the Healthy Eating Guidelines for Pregnant Women from the Department of Health and Ageing, which are general guidelines and do not inform health professionals such as midwives (who are not trained in nutrition) on how to approach pregnant women in regard to nutrition advice [28].

Midwives are in a prime position to provide healthy eating information to pregnant women [26]. However, Davis et al [29] identified in an Australian study evaluating an intervention program for women with a BMI greater than 35 that health professionals including midwives, benefited from additional education to enable them to provide healthy eating information. Little is known regarding the extent to which midwives fulfil their role in nutrition education. Thus the aim of this literature

review is to explore what has been investigated about the role of midwives in providing nutrition education during pregnancy.

## **Method**

### **Search strategy**

A review of the literature was undertaken to locate relevant studies in the areas of nutrition, pregnancy, education and the role of midwives.

The search started with identifying relevant journal articles. Governmental websites, such as the Australian Government Department of Health and Ageing. The Australian Nursing and Midwifery Council (ANMC) and the Australian College of Midwives (ACM), were also explored to identify any guidelines pertinent to the nutrition role of midwives during pregnancy.

### **Databases searched**

The databases searched included Thomson Reuters' Web of Science, SCOPUS, Medline, CINAHL, Cochrane library, ScienceDirect, ProQuest Central and PubMed Central.

To ensure a broad body of literature, no date limits were applied. The only restrictions were that the articles were published in English, in scholarly journals and provided information about the knowledge, education, and attitudes of midwives toward nutrition during pregnancy.

Studies that dealt with the role of midwives in education regarding smoking, alcohol and clinical aspects of nutritional issues (such as anaemia) were excluded.

### **Key words used to search for relevant literature**

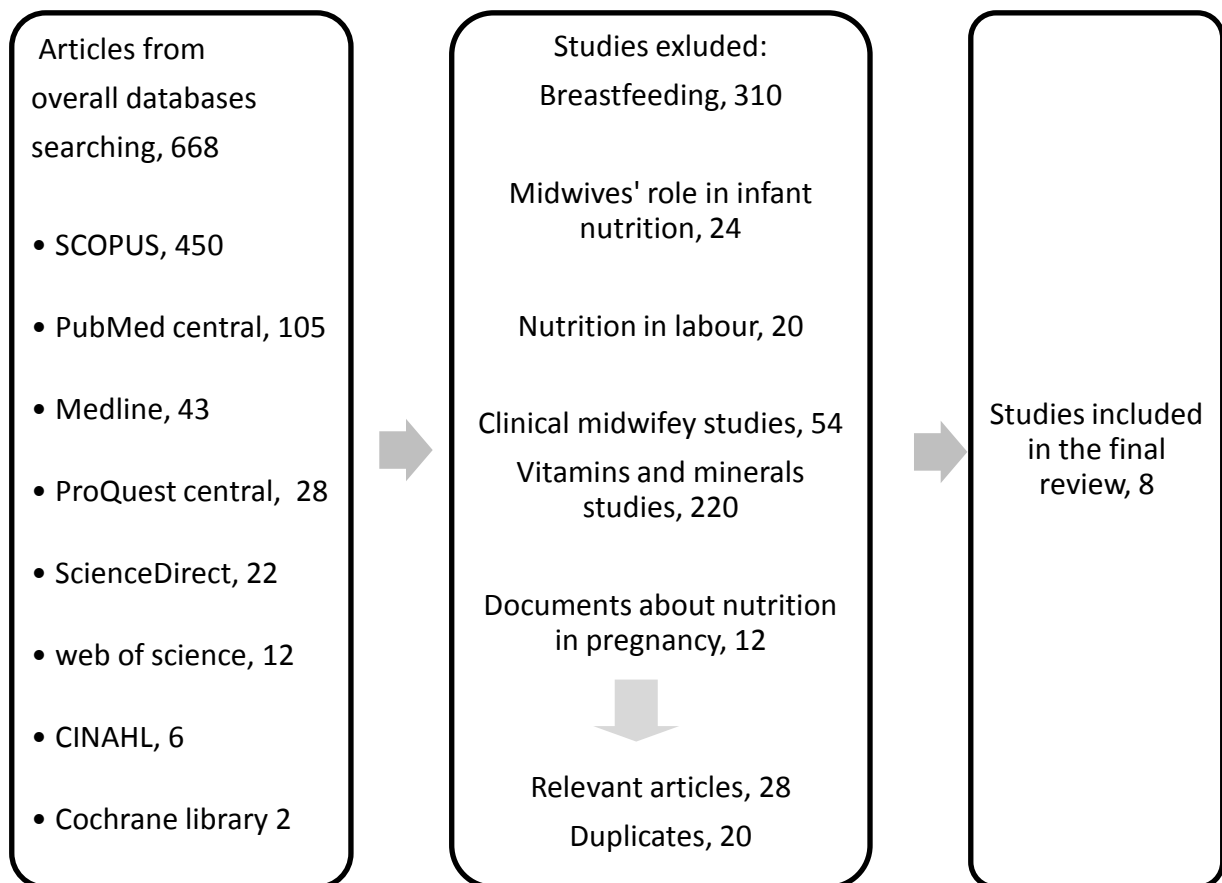
A wide variety of key words were used across the searched databases. The key words included: health professional, midwife, nutrition, food, maternal nutrition, antenatal, prenatal, healthy eating, pregnancy, pregnant women, education, knowledge, practise, attitude, behaviour, importance, role, effect, recommendation, guidelines and approach.



Boolean operators and truncation between different search terms were used in accordance with the specific instructions of each database, either to broaden, narrow or refine the search results.

Additional strategies to enrich the search findings were applied, including use of synonyms and alternative key words, exchanging singular and plural and using spelling variations (for example; fetal, foetal).

The bibliographies and reference lists of the relevant articles were also examined to identify further studies.



**Figure 1: flowchart for identifying eligible studies**

## Results and discussion

### Overview of the studies

In comparison to the number of studies investigating midwives' knowledge of smoking [30], alcohol [31] and breastfeeding [32, 33], few studies explored the nutrition knowledge and practices of midwives. Of those studies that have been undertaken to explore the knowledge, attitudes, education and communications skills of midwives regarding nutrition in pregnancy [21, 34, 35, 36, 37, 38, 39, 40] the majority were descriptive and exploratory. Summary details of the studies are presented in Table 1. Governmental documents included in this review are also listed in Table 2.

Food and Nutrition Guidelines for Healthy Pregnant Women-A Background Paper
Australian Nursing and Midwifery Council's <i>Standards and criteria for the accreditation of nursing and midwifery courses leading to registration, enrolment, endorsement and authorisation in Australia—with evidence guide</i>
Australian College of Midwives , ACM Philosophy for Midwifery
Australian Nursing and Midwifery Council's <i>National Competency Standards for the Midwife</i>
National Institute for Health and Clinical Excellence (NICE) <i>Improving the nutrition of pregnant and breastfeeding mothers and children in low income households</i>

Table 2 shows the governmental documents included in this review

### Midwives and nutrition education during pregnancy

Midwives were reported to lack the essential knowledge and skills to provide adequate or reliable nutrition advice [34, 40], which may be somewhat contrary to the expectations of the women in their care [41]. For example, a study by Mulliner and colleagues [34] in the United Kingdom used both quantitative and qualitative approaches to explore the education, knowledge and attitudes to nutrition during pregnancy in a randomly selected sample of registered midwives (N=77). They reported that 86% (50 of 77 participants) of registered midwives had no formal nutrition education post

qualification; 46% (27 of 77 participants) scored poorly in nutrition knowledge; and more than half of those midwives (58 of 77 participants) felt unqualified to provide nutrition advice for pregnant women, especially to vegetarian women, women from ethnic or religious background or women with prior medical conditions. Although the authors acknowledged the small size of their sample, the study results clearly indicated that midwives lacked basic nutrition information and would benefit from improving their nutrition knowledge [34].

Another study in the United Kingdom by Barrowclough and Ford [40] examined the knowledge of 35 midwives and reported that the midwives had poor knowledge in areas such as recommended weight gain, recommended increase in energy requirements, women at risk of iron-deficiency anaemia and folic acid requirements during pregnancy to prevent reoccurrence of Neural Tube Defect and when should folic acid supplements be commenced.

A relatively recent study in New Zealand similarly examined midwives' nutrition knowledge and their perceptions of the importance of nutrition during pregnancy (N=370) [35]. The study reported that less than 40% (N=136/370) of midwives had formal nutrition education, of whom 75% (N=106/136) had received nutrition information as a component of their midwifery education. The other sources of midwives' nutrition education were not reported.

In contrast to the low levels of nutrition training, the New Zealand study found that the majority of midwives indicated that nutrition was 'important' or 'very important' during pregnancy and 94.9% of the midwives (N=351/370) indicated they played a 'significant' or 'very significant' role in educating pregnant women about nutrition [35]. The declaration of the majority of midwives in this study of being involved in educating pregnant women about nutrition but not having received nutrition information as a component of their professional training raises the question of their preparedness to provide such information. In addition, their perception that they played a significant / very significant role in nutrition education of pregnant women would benefit from further exploration, as it is unclear what roles they actually performed and what professional guidance was available to inform this role.

New Zealand midwives in general reported a high level of confidence in dealing with nutrition issues apart from providing advice to vegetarian women or women with medical conditions such as gestational diabetes. The study also identified the lack of guidelines about nutrition education for health professionals in Australia and New Zealand, and recommended that development of a policy regarding this matter should be considered in both countries.

The Australian Nursing and Midwifery Council (ANMC) in their national competency standards [42] confirmed that the midwife has an important role in general health counselling and education, including antenatal education. A recent report on core competencies and an educational framework for primary maternity services in Australia further identified that the role of midwives included the promotion of healthy eating [43]. The development of these core competencies involved a Delphi process with Australian midwives, indicating professional recognition of the nutrition education role of midwives.

However, only a few studies have reported on the nutrition knowledge of Australian midwives or their role or attitudes toward providing nutrition education during pregnancy. One Australian study reported that midwives provide advice about diet in general. However, they reported that they do not dedicate enough time of antenatal visits to diet unless the women have some issues such as obesity, digestive problems or if she is following a vegetarian diet [36]. They also reported placing a low priority on listeria risk in comparison to other issues during pregnancy such as alcohol and smoking. This was attributed by the midwives to their lack of enough knowledge regarding the disease and its complications. [36]. In another study [37], Australian midwives and other health professionals caring for pregnant women perceived they lacked the essential communication skills, training and resources to deal with the rapidly evolving obesity epidemic among childbearing women. These Australian data are consistent with the results reported in a study exploring health promotion practice within maternity services in the United Kingdom [38]. Midwives in the United Kingdom study reported not having enough background knowledge or training to provide advice regarding weight management or healthy eating to pregnant women in their care [38].

Midwives' lack of knowledge and essential skills regarding nutrition is not limited to Australia or the United Kingdom. This was confirmed in a study by Szwajcer and colleagues [21] who undertook an in-depth exploration of verbal and written communication of midwifery practices in Holland. They reported that nutrition communication was provided relatively late in pregnancy, when pregnant women were more interested in other things related to pregnancy than in receiving nutrition education. Although pregnant women in the study were educated about healthy nutrition in general terms and were given nutrition brochures by their midwives, the midwives did not reinforce the information in the brochures and therefore pregnant women rarely looked at them at home.

The study by Wills and Forster [39] found that even when midwives offered nutritional advice for pregnant women, this advice lacked sound scientific evidence. For instance, in matters such as nausea and vomiting, it was found that herbal supplements and alternative therapies were usually included in the advice given, despite the lack of evidence-based guidelines to direct midwives' practice in this area [39]. This may indicate a lack of appropriate education on nutrition during pregnancy and that midwives may not recognise the need for a sound scientific evidence base for their nutrition-related practice as for their other areas of professional practice.

Overall, the literature suggests that midwives would benefit from more nutrition education [34, 40]. Reflecting this situation, Barrowclough and Ford [40] developed open learning materials for a sample of midwives in the United Kingdom (N=35) to improve their nutrition knowledge. The scores of nutrition knowledge of the midwives in the study increased significantly after accessing and reviewing the materials (mean scores increased from 46.81 in the pre-questionnaire to 71.29 in the post-questionnaire  $p < 0.001$ ). The authors recommended that for these programs to be successful, policy makers and managers should allocate sufficient time for such education. Unfortunately, no research regarding further developments of this project was subsequently identified in the literature.

### **Sources of nutrition information obtained by midwives**

Limited research has been published that has examined the sources of nutrition information used by midwives. In a small study (N=77) conducted in the United Kingdom, approximately half of the

midwives (48%) reported they relied on the media (not specified) rather than their professional education as a key source from which to obtain nutrition information [34]. This is in contrast to a relatively recent study in New Zealand that reported New Zealand midwives used mainly the Ministry of Health documents, such as the guidelines for pregnant and breastfeeding women and the New Zealand Food Safety Authority pamphlet on food safety, as their sources for nutrition information. The same study reported that only 53% (196 of 370) of midwives accessed other health professionals, such as dietitians, for information [35]. This can possibly be explained by the fact that there was already a comprehensive and detailed publication about the various nutritional issues during pregnancy and their management (including practical advice) available for midwives in New Zealand [44].

The same cannot be said about other countries such as Australia, as there are currently no studies reporting on the sources and accuracy of nutrition information provided by Australian midwives to pregnant women. Preliminary investigations indicate that nutrition education resources available via antenatal clinics, where many midwives work, do not have a comprehensive coverage of nutrition issues important during pregnancy [20]. Such a lack of nutrition guidance for midwives in Australia to direct their nutrition counselling practices for pregnant women might lead them to obtain their information from sources which might not be evidence-based or up to date. This would not only result in a missed nutrition education opportunity but also potentially result in health professionals mis-informing pregnant women [39]. Thus investigating this matter should be considered a public health priority.

### **Midwives as primary providers of nutrition information during pregnancy**

Nutritionists and dietitians are the professionals who are educated and accredited to provide dietary advice to the population, including pregnant women. A study of pregnant women in antenatal clinics in Queensland reported they preferred to have access to a dietitian as an expert in the field of nutrition , however few women have such access [5]. It also is unlikely that pregnant women in Australia would consult a dietitian due to the limited number of dietitians available in maternity services [5]. In

some instances a woman may be referred to a dietitian by a general practitioner due to the pre-existence or emergence of a particular problem during pregnancy [45].

It is more common for pregnant women, particularly those with a low risk pregnancy, to have contact with a midwife [46]. Hence, when they are the primary caregivers during pregnancy, midwives have the opportunity to provide nutrition advice to pregnant women in a timely manner. Midwives potentially may benefit from dietitians or nutritionists developing practice guidelines for midwives or formulating collaborative strategies regarding nutrition education [35].

The recently released National Maternity Services Plan (2011) [47] clearly emphasises the importance of equipping midwives (among other health professionals) with all the necessary knowledge and skills to provide better maternity services, including addressing the issue of obesity. This is essential if the goal of healthiest Australia is to be attained by 2020, as discussed by the National Preventive Health Taskforce in 2008 [48].

### **Nutrition content of curricula in midwifery programs**

Touger-Decker et al suggested that nutritional issues and their management should be included in the education curricula of midwifery courses [49]. Two studies were identified that had described how nutrition content is incorporated into subjects within midwifery programs [50, 51]. The studies are examples from the United States and New Zealand about how nutrition can be easily integrated into midwifery education based on midwifery competencies. The United States example explained how a 2-hour seminar on nutrition during pregnancy assisted midwives to achieve competencies in nutrition assessment and counselling [50]. The New Zealand example showed how collaboration between dietitians and midwifery educators can work to provide midwives with the best evidence-based nutrition knowledge. It included the stages of developing an optional nutrition paper using different models based on students' feedback on what can help them to deliver better nutrition advice. What is promising is the students in the study suggested that this education needed to be compulsory. Registered midwives would also be offered the opportunity to benefit from the nutrition exercise [51].

There is a lack of data about what nutrition content is being taught in Australian midwifery programs and whether nutritional assessment or management skills are required as a pre-registration competency for Australian midwives. In Australia, nutrition can be taught as a part of the curricula in both undergraduate and postgraduate courses for midwives. However, no national strategies about the way nutrition is incorporated into nursing/midwifery courses across Australia have been identified [52]. The Standards of Accreditation of Nursing and Midwifery Courses Leading to Registration in Australia [53] have no content about nutrition. Furthermore, there is nothing specific about nutrition competencies mentioned in the standards of competencies document for Australian midwives by the Australian Nursing and Midwifery Council (ANMC) [42]. This is in stark contrast to United States of America programs for midwives, which highlight the importance of having nutrition competencies, such as nutrition assessment, for their graduates [49].

From the above, it would appear that there has been no expectation that midwives undertake the role of providing nutrition education for pregnant women in Australia. However, this situation may be changing, as a recent report on core competencies and an educational framework for primary maternity services in Australia identified that the role of midwives includes the promotion of healthy eating [43].

## **Conclusion**

This literature review has shed light on the limited information available on the current role of midwives in nutrition education during pregnancy. There has been little international and Australian research reported examining the role of midwives in nutrition education during pregnancy and the nutrition curricula of midwifery programs.

Midwives were reported to share a belief in the importance of nutrition during pregnancy and the significant role they should play in educating women about nutrition. However, some midwives self-reported a lack of basic knowledge of nutrition requirements during pregnancy.

The lack of basic nutrition knowledge among some midwives may be linked to inadequate nutrition education provided in both undergraduate and postgraduate midwifery programs and the apparent low



priority put on nutrition education in midwifery education, as signified by its absence [42, 49, 52, 53]. Unlike other countries [27], Australia also lacks scientific guidelines regarding nutrition in pregnancy that has been specifically tailored to the needs of midwives.

More research is required in this vital area as a first step towards better nutrition education for midwives and ultimately better nutrition information/ education for future mothers and generations.

### **Acknowledgments**

The authors would like to thank Elaine Newby who helped the editing of this review.

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Authors & year of publication	Type of study	Aim of study	Country	Method and sample size	Response rate	Key conclusion
Elias & Green (2007)	Descriptive	To determine the nutrition knowledge of New Zealand midwives	New Zealand	A postal survey sent to all members of New Zealand college of midwives n= 1340 (18 questions)	28%	Overall New Zealand midwives were knowledgeable of nutrition issues during pregnancy and felt confident educating pregnant women on them.
Bondarianzadeh (2009)	Exploratory	To explore midwives' perceptions of food-related risks and approach to listeria education during pregnancy	Australia, NSW	qualitative framework, 10 midwives providing antenatal care in hospitals (1 private and 2 public)	NA	<ul style="list-style-type: none"> <li>- The scarcity of educational materials about food during pregnancy.</li> <li>- Midwives stereotype people regarding education.</li> <li>- Midwives perceive listeria risk to be of low priority.</li> </ul>
Szwajcer et al (2009)	Descriptive	To obtain an in-depth understanding of verbal and written nutrition communication in midwifery practice.	The Netherlands	Qualitative/interviews - Recording 12 initial antenatal consultations followed by 2 semi-structured interviews with the women.	NA	<ul style="list-style-type: none"> <li>- The provision of a nutrition brochure is not enough.</li> <li>- Midwives should refer to a nutrition brochure in addition to verbal communication.</li> </ul>
Mulliner et al (1995)	Descriptive	To explore midwives' education, knowledge, & attitudes to nutrition in pregnancy	UK	Qualitative & quantitative, survey/ interview -Selected sample of 77 registered midwives in one English regional health authority.	78%	<ul style="list-style-type: none"> <li>- Midwives require more education in nutrition both during basic and following qualification.</li> <li>- Nutrition issues should be included in continuing education programs available to qualified midwives.</li> </ul>
Barrowclough & Ford (2001)	Intervention/ education program	To develop and evaluate an open –learning materials for midwives to change their nutritional knowledge.	UK	Surveys were administrated pre and post the delivery of an open-learning nutrition package. -35 midwives were purposely selected but 27 completed the post intervention survey.	NA	<ul style="list-style-type: none"> <li>- Open learning is an effective and convenient method for educating midwives about nutrition.</li> <li>-In order for such interventions to be successful, policy makers and managers should allocate sufficient time for them.</li> </ul>
Lee et al (2010)	Exploratory	To explore midwives' opinions and practices/ needs for training regarding health promotion in pregnancy.	UK	Interviews with 13 midwives across 3 NHS Trusts in the North West of England followed by an audit of health promotion services delivered to pregnant women.	NA	<ul style="list-style-type: none"> <li>- Midwives were not confident discussing complex nutrition issues with pregnant women.</li> </ul>
Schmied et al (2010)	Descriptive	To explore the experiences and concerns of health professionals who care for childbearing women who are obese.	Australia NSW	-Focus groups and Face to face interviews -In three maternity units in New South Wales, Australia. - 34 midwives and three other health professionals.	NA	<ul style="list-style-type: none"> <li>-Concerns about how to communicate with obese women without damaging the relationship were expressed.</li> <li>-Training and skills development for health professionals are needed to provide better services in terms of obesity.</li> </ul>
Wills & Foster (2007)	Cross-sectional	To determine what advice and support midwives give to women experiencing nausea and/or vomiting in pregnancy.	Australia	- Survey -49 midwives who provide antenatal care at a public, tertiary maternity hospital in Melbourne	51%	<ul style="list-style-type: none"> <li>- Advice for nausea and vomiting in pregnancy was generally consistent with the advice reported in the literature.</li> <li>- Common advice for nausea and vomiting in pregnancy is based more on anecdotal evidence than scientific evidence.</li> <li>- Herbal medicines and alternative treatments are often included in common advice given by midwives.</li> </ul>

Table (1) Summary of the studies included in the review