"Expectant parents' views of factors influencing infant feeding decisions in the antenatal period: a systematic review"

Abstract:

Objective: To explore the factors that influence expectant parents' infant feeding decisions in the antenatal period.

Design: Mixed Method Systematic Review focussing on participant views data.

Data Sources: CINAHL, Medline, Embase and PsychInfo databases were interrogated using initial keywords and then refined terms to elicit relevant studies. Reference lists were checked and hand-searching was undertaken for 2 journals ('Midwifery' and 'Social Science and Medicine') covering a 3 year time period (January 2011 to March 2014). Key inclusion criteria: studies reflecting expectant parents' views of the factors influencing their infant feeding decisions in the antenatal period; Studies in the English language published after 1990, from developed countries and of qualitative, quantitative or mixed method design.

Review Methods: A narrative interpretive synthesis of the views data from studies of qualitative, quantitative and mixed method design. Data were extracted on study characteristics and parents' views, using the Social Ecological Model to support data extraction and thematic synthesis. Synthesis was influenced by the Evidence for Policy and Practice Information and Co-Ordinating Centre approach to mixed method reviews.

Results: Of the 409 studies identified through search methods, 17 studies met the inclusion criteria for the review. Thematic synthesis identified 9 themes: Bonding/Attachment; Body Image; Self Esteem/Confidence; Female Role Models; Family and Support Network; Lifestyle; Formal Information Sources; Knowledge; and Feeding in front of others/Public. The review identified a significant bias in the data towards negative factors relating to the breastfeeding decision, suggesting that infant feeding was not a choice between two feeding options, but rather a process of weighing reasons for and against breastfeeding. Findings reflected the perception of the maternal role as intrinsic to the expectant mothers' infant feeding decisions. Cultural perceptions permeated personal, familial and social influences on the decision-making process. Expectant mothers were sensitive to the way professionals attempted to support and inform them about infant feeding choices.

Conclusions: By taking a Social Ecological perspective, we were able to explore and demonstrate the multiple influences impacting on expectant parents in the decision-making process. A better understanding of expectant parents' views and experiences in making infant feeding decisions in the prenatal and antenatal periods

will inform public health policy and the coordination of service provision to support infant feeding activities.

Key terms: antenatal, bottle feeding, breast feeding, choice, decision-making, fathers, infant feeding, mothers, parents, social ecological model.

Introduction:

Empirical evidence has provided a strong association that exclusive breastfeeding reduces infant mortality and morbidity relating to childhood disorders such as atopic eczema, acute otitis media, upper respiratory tract infections, and gastrointestinal tract infections (Renfrew et.al. 2012, Duijts, et.al. 2010, Greer et.al., 2008). Recent attention has turned to whether infant feeding choice has an implication for the development of obesity in childhood (Horta et al 2007). Reducing obesity has become an urgent priority with International recognition of the detrimental health and economic effects of obesity on populations throughout the world (Keats and Wiggins 2014). Evidence identifies that breastfeeding may be a protective factor which contributes to the reduction in obesity and associated chronic morbidities throughout the lifespan (Koletzko et.al. 2009).

Within the UK, infant feeding has become a public health priority since the early 21st Century (NICE, 2008) as a response to the Innocenti Declaration in 1990 which significantly influenced the commitment to increase breastfeeding rates internationally (WHO 2003). In the UK there has been a steady increase in the initiation and continuation of breastfeeding, although there continues to be a reduction in the numbers of women maintaining breastfeeding at six weeks postnatally (McAndrew et al 2012, Renfrew, et al 2005). Subsequently researchers have focussed on the consideration of factors influencing the initiation and continuation of breastfeeding in the postnatal period in order to identify ways to support mothers to breastfeed for longer (Sloan, et al , 2006, Bishop, et al, 2008, Agboado, et al, 2010).

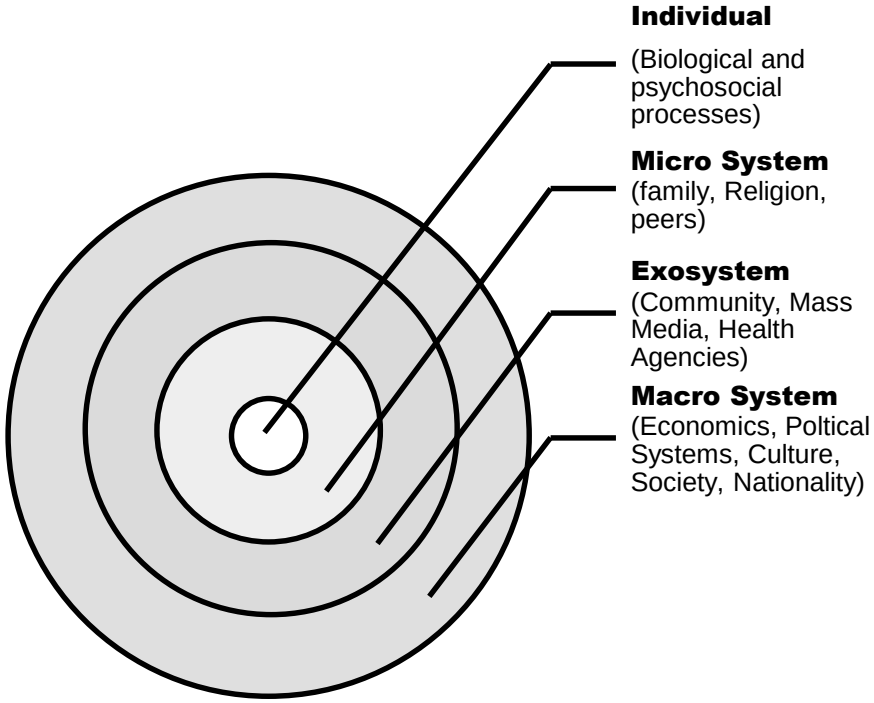
Nevertheless it is argued that influences on infant feeding decision-making occur pre-pregnancy and are formalised in the antenatal period. Indeed studies have identified that maternal feeding intentions prior to birth are closely linked to actual feeding practices (Scott, et al, 2004, Donath & Amir, 2003). There is an increasing body of research suggesting parents are influenced by multiple sociocultural factors which interact to guide their infant feeding decisions (Symon, et al 2013, Barona-Vilar, et al 2009). To further our understanding of the underlying factors that influence parents' infant feeding decisions in the antenatal period, a mixed methods systematic review including eligible studies of qualitative, quantitative and mixed method designs was conducted with the aim of exploring the expectant parents' perspectives. Including studies of different designs was intended to widen the capture of data relevant to the aim of this review, enhance the applicability of the results and had the potential to inform policy and service developments to support mothers to breastfeed for longer.

Method

As a narrative interpretive synthesis no *a priori* outcomes were specified (Dixon-Woods et al., 2006). Outcomes that emerged from the data reflected the broad focus of the review question and were categorised in accordance with the relevant categories of the Social Ecological model (figure 1). The Social Ecological model was employed to provide a framework for data extraction and data synthesis. Internationally the model has been utilised in breastfeeding policy development (Australian Capital Territory, 2010, Raffle, et al, 2011) although is not overtly evident in UK guidance (NICE, 2008). The model considers individuals as inherently linked to, and interacting with, a complex array of 'systems' that ultimately shape their

development and understanding of the world around them. These systems range from influences deriving from the individual themselves (the 'Individual' System), their immediate environment and significant others (the 'Micro' System), the wider environment including the community and health agencies (the 'Exo' system) and finally societal and cultural influences (the 'Macro' system) (Rayner & Lang, 2012). Subsequently the reported views of parents within each of the included studies were explored in the context of their relationship to these social ecological 'systems'.

Figure 1: Social Ecological Model (adapted from Rayner & Lang 2012)



Due to the differing methods employed in the included studies, synthesis of the parent views data required specific consideration. The UK Evidence for Policy and Practice Information and Co-Ordinating (EPPI) Centre's original approach, promotes parallel data extraction and synthesis of qualitative and quantitative data prior to a combined synthesis. The main data is derived from Randomised Controlled Trials, supported by

qualitative data (Thomas & Harden, 2008, Harden et al., 2004). However the review presented in this paper was a narrative interpretive synthesis of qualitative themes derived from parent views data from studies of varying design. Hence a combined synthesis of the whole data was undertaken immediately after parallel qualitative and quantitative data extraction from the included studies.

Study Selection: The following search terms were used: antenatal, bottle feeding, breast feeding, choice, decision-making, fathers, infant feeding, mothers, parents. The Medline, CINAHL, Embase and PsychInfo databases were searched for the periods January 1990 to March 2014. Two journals ('Midwifery' and 'Social Science and Medicine') were chosen on the basis of initial findings that they frequently included papers on the topic of infant feeding and breastfeeding. The journals were hand searched (January 2011 to March 2014) and reference lists checked for further studies not identified through database searches.

Eligibility criteria:

- The primary focus of the study was to explore parents' views of the factors influencing their infant feeding decisions in the antenatal period.
- Participants included expectant mothers of childbearing age of any parity, fathers or 'parents'.
- In recognition that the 1990 'Innocenti' declaration (WHO 2003) has influenced subsequent International policy, research articles from developed countries, published in English and conducted from January 1990 to March 2014.

- Primary data-collection period from the antenatal period up to 1 week postnatally. Where studies presented both antenatal and postnatal data, the postnatal data after 1 week were excluded. In recognition of the possibility of recall bias, postnatal studies that focussed on antenatal influences were carefully considered before inclusion to ensure they met the inclusion criteria and that data were collected in the immediate postnatal period.
- Studies that focused on parents whose infant feeding decision would be based on specialist clinical advice were excluded.
- Dissertations and unpublished research were also excluded.

Risk of bias assessment: Quality appraisal tools for qualitative data (CASP, 2013) and quantitative data (EPHPP 1998) were adapted to ensure the assessment of quality of qualitative and quantitative studies were assessed in relation to key criteria (see figures 3a/3b). Tools were piloted prior to use in the review. Studies were assessed against quality criteria according to the study design and presentation of the findings. Each criterion was rated high to low depending on assessment of the available information and the quality of the design, methodology and results within each study. Mixed method studies were assessed with both tools and given an overall rating. Overall ratings were judged on the combination of ratings with studies rating 'high quality ' attracting ≥7 'high quality criteria' in qualitative & mixed method studies or ≥6 in quantitative studies (reflecting the difference in the number of criterion) and studies rating 'Low quality' attracting ≥ 2 'low' quality criteria (see figures 3a and 3b). No studies were excluded on the basis of the quality appraisal.

However the significance of thematic codes were considered in conjunction with the strength of the quality rating for the studies contributing to that code.

Data collection: Data extraction tools were devised and piloted. Tools were created to reflect the Social Ecological model 'systems' (Rayner & Lang 2012). For each study phrases, key words and metaphors were extracted and entered into the data extraction tools and were mapped to the specific 'system' of the Social Ecological model, depending on the source of the influence on the expectant parents' views. In the case of quantitative and mixed method studies that compared different groups within samples (e.g. age, ethnicity, method of feeding choice), the quantitative data were considered in relation to both the frequency of the response for each question within the sub group, as well as the strength of the direction of the evidence for a particular sub group.

Synthesis: Thematic synthesis was undertaken (Gough, 2007). Thematic codes emerged following several iterations between the extracted data and each study in order to focus in on the context and meaning of the parents' views. The data were also explored in conjunction with the 'systems' descriptors of the Social Ecological model to situate the source of the influence on expected parents' views. The emerging thematic codes were further categorised in relation to whether the data related to a positive or negative focus in relation to breastfeeding or bottle feeding choices, reflecting the emotive and practical considerations of the infant feeding decision. The synthesis focussed these thematic codes into firstly nine descriptive categories that reflected the nature of the codes in relation to a combination of the decision-making

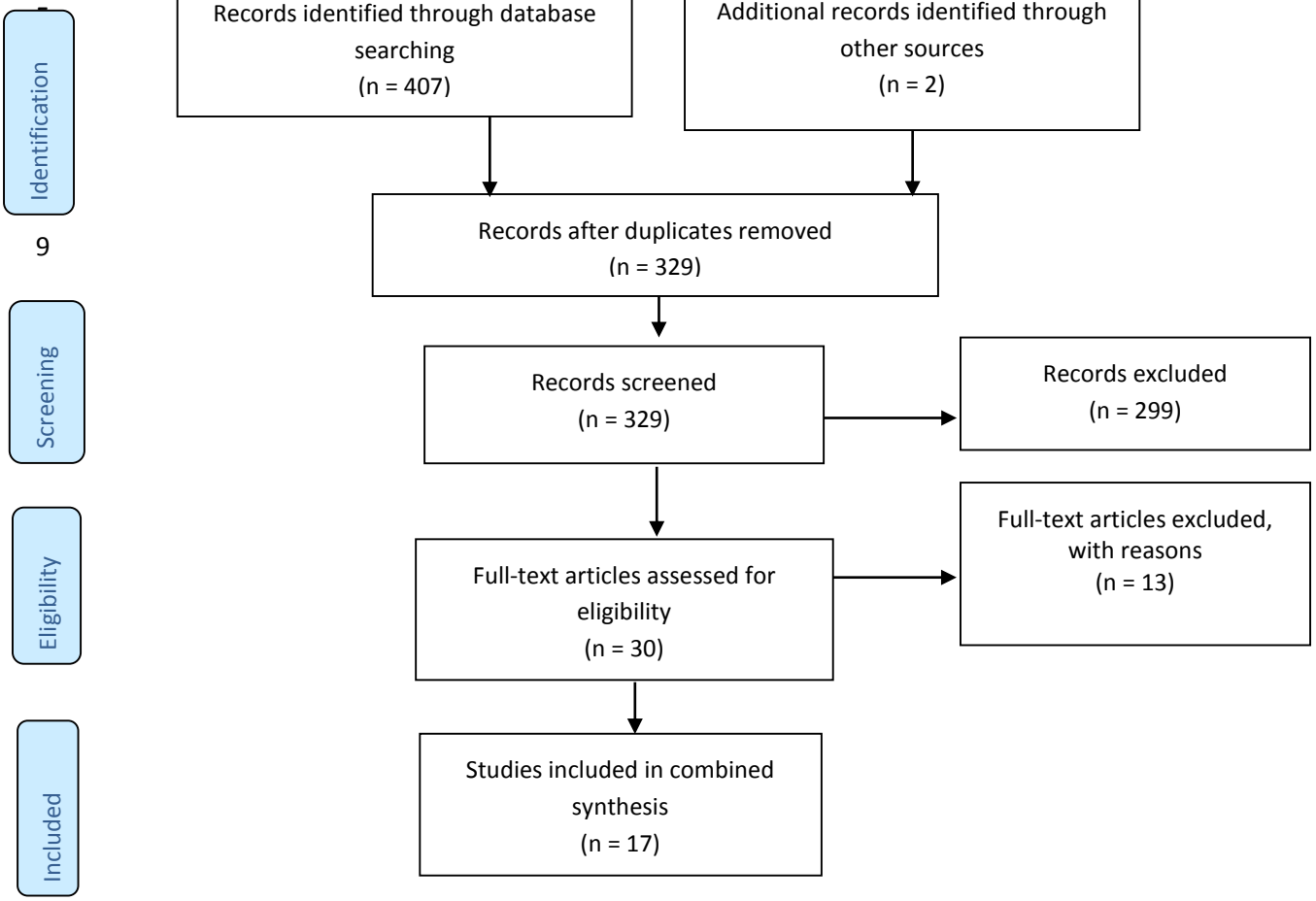
activity and the source of the influence (Bonding/Attachment; Body Image; Self-Esteem/Confidence; Female Role Models; Family and Social Network; Lifestyle; Feeding in front of others/in public; Knowledge; Formal Information Sources) leading to the final analytical interpretation (Figure 4). An expert researcher was consulted throughout the review to reduce the risk of bias and strengthen reliability.

Results

Despite the intention to include studies that included both parents as sources of views data, 16 of the 17 studies included samples of expectant mothers with only Lothian (1994) briefly reporting fathers' views, therefore the review principally addresses expectant mothers' views of the influences on their infant feeding decisions.

The PRISMA diagram (Moher et al 2009) shows the flow of studies through the review (Figure. 2). Full text review identified 17 eligible studies including 2 mixed-method (Kong & Lee, 2004, Dyson, et al, 2010), 10 qualitative (Alexander et.al. 2010, Barona-Vilar et al., 2009 Earle, 2002, Hannon, et al, 2000, Hoddinott & Pill, 1999, Lothian 1994, Moore & Coty, 2010, Sheehan, et al, 2003, Stewart-Knox, et al, 2003, York & Hoban, 2013) and 5 quantitative studies (Gage et al., 2012, Gielen et al 1992, Humphreys et al 1998, Maehr et al 1993, Weimann et al 1998). As intended, the studies were located in various developed countries including the UK, America, Australia, Spain, Hong Kong and one study (Gage et al 2012) was a multi-centre European study (Finland, Hungary, Germany, England, Spain).

Figure 2: PRISMA Flow Diagram



Across the 17 included studies there were a total of 4,767 expectant parents, the significant majority (4,762) being expectant mothers. 4,205 were included in quantitative studies, 344 in qualitative studies and 318 in mixed method studies.

Risk of Bias:

Figures 3a/3b below identify the results of the quality appraisal assessments.

Figure 3a Qualitative studies quality appraisal

Quality rating categories	Aims/design	Recruitment strategy	Data collection process	Researcher/ participant relationship	Ethical issues	Data analysis	Credibility of findings	Statement of findings	Transferability	**Overall rating**
Alexander et.al. (2010)	✓	✓	✓	X	✓	✓	✓	✓	•	**High**
Barona-Villar et.al. (2009)	✓	✓	✓	X	✓	✓	✓	✓	•	**High**
Earle (2002)	✓	✓	✓	X	✓	•	•	✓	•	**Medium**
Hannon et.al. (2000)	✓	✓	✓	•	•	✓	✓	✓	•	**Medium**
Hoddinott & Pill (1999)	✓	✓	✓	✓	•	✓	✓	✓	•	**High**
Lothian (1994)	•	X	X	X	X	X	X	•	•	**Low**
Moore & Coty (2006)	✓	✓	✓	•	✓	✓	✓	✓	•	**High**
Sheehan et.al. (2003)	✓	✓	✓	•	•	✓	•	✓	•	**Medium**
Stewart-Knox et.al. (2003)	✓	•	•	X	X	•	✓	•	•	**Low**
York et.al. (2013)	✓	✓	✓	X	✓	✓	•	✓	•	**Medium**

Key: ✓= Present/High quality • = Present/Medium quality X = present or absent from text/low quality

Figure 3b. Quantitative and Mixed method Studies quality appraisal.

Quality rating categories	Representative sample	Study Design	Data collection methods	Withdrawals/ drop outs	Data analysis	Credibility of results	Statement of results	Generalizability		**Overall Rating**
Gage et.al. (2012)	✓	✓	✓	•	✓	✓	✓	•		**High**
Gielen et.al. (1992)	✓	✓	✓	✓	✓	✓	•	•		**High**
Humphreys et.al. (1998)	•	✓	•	✓	•	•	•	•		**Medium**
Maehr et.al. (1993)	X	•	X	•	•	•	•	X		**Low**
Weimann et.al. (1998)	•	✓	✓	•	✓	✓	•	•		**Medium**
	Quantitative quality rating								**Overall Qualitative quality rating**	**Overall rating**
Mixed Method Studies										
Dyson et.al. (2010)	•	✓	✓	X	✓	✓	✓	•	✓	**Medium**
Kong & Lee (2004)	✓	✓	✓	✓	✓	✓	✓	•	•	**High**

Key: ✓= Present/High quality • = Present/Medium quality X = present or absent from text/low quality

Overall Ratings: '**High'** = majority 'high quality' rated criterion (≥7 in qualitative & mixed method studies or ≥6 in quantitative studies reflecting the difference in number of criterion). '**Medium'** = mixture of 'high' and 'medium' quality criterion. '**Low '** = ≥ 2 'low' quality criterion**.**

Comparison of the quality assessment with the initial categorisation of themes identified that the 'Low quality' rated studies of Lothian (1994), Maehr et.al. (1993) and Stewart-Knox et.al. (2003) produced data within many thematic codes common with high quality and medium quality rated studies. This suggests that studies rated as low quality produced themes that were very similar to the studies whose data were considered to be more robust.

The findings are now described and will be presented within the descriptive themes that emerged from the thematic synthesis (also see supplementary information figure 6). The context and terminology participants used in these studies is suggestive of the emotional and psychological complexities of the decision-making process. The data suggests that decisions are as much to do with biological, emotional and psychological factors as the consideration of other's opinions and the practicalities of feeding their infant at home, at work and in public.

Bonding and Attachment: The majority of studies identified bonding between mother and infant as a positive influence on breastfeeding decisions (Alexander et.al. 2010, Earle 2002, Gielen et.al. 1992, Hannon et.al. 2000, Hoddinott & Pill 1999, Humphreys et.al. 1998, Kong & Lee 2004, Lothian 1994, Maehr et.al. 1993, Moore & Coty 2006, Sheehan et.al. 2003, Stewart-Knox et.al. 2003). Bonding was often mentioned in positive terms relating to the emotional attachment with the infant and an essential part of the maternal role.

Body Image: This theme identified a concentration of data towards negative perceptions of breastfeeding (Alexander et.al. 2010, Dyson et.al. 2010, Earle 2002 Hannon et.al. 2000, Hoddinott & Pill 1999, Kong & Lee 2004, Moore & Coty 2006, Sheehan et.al. 2003, York & Hoban 2013). The negative responses voiced within the studies in relation to expectant mothers' perceptions of breastfeeding and body image was both emotive and conveyed a sense of insecurity and dislike regarding the physical act of breastfeeding. Negative comments were by participants considering either feeding option. In contrast many studies reflected the 'naturalness' of

breastfeeding as a factor in deciding to breastfeed (Gielen et.al. 1992, Hoddinott & Pill 1999, Kong & Lee 2004, Lothian 1994, Maehr et.al. 1993, Sheehan et.al. 2003).

Self Esteem/Confidence: Determination was a consistent sub-theme reflecting women's desire to breast *or* bottle feed (Barona-Villar et.al. 2009, Dyson et.al. 2010, Hannon et.al. 2000, Lothian 1994, Moore & Coty 2006, Sheehan et.al. 2003, York & Hoban 2013). However for potential bottle feeding mothers there was an acknowledgement that the decision was not without cost (Dyson et.al. 2010, Earle 2002, Moore & Coty 2006, York & Hoban 2013). Guilt and failure was portrayed as both a concern if mothers were to fail to succeed at breastfeeding, and if they were to eventually decide to bottle feed (Dyson et.al. 2010, Sheehan et.al. 2003). Indeed one study suggested that mothers may conceal their real intention to bottle feed to avoid negative judgements from others (Sheehan et.al. 2003). Common to several studies was the intention to try to breastfeed (Alexander et.al. 2010, Barona-Villar et.al. 2009, Earle 2002, Hoddinott & Pill 1999, Kong & Lee 2004, Lothian 1994, Sheehan et.al. 2003, York & Hoban 2013). This tentativeness appeared in the context of waiting to see if expectant mothers 'liked' breastfeeding, whilst others held beliefs that it was important to try to breastfeed for health reasons. The data indicated that expectant mothers' decisions to breastfeed were driven by both moral and personal factors intrinsic to their view of the maternal role.

Female role models: The data suggested that female role models have a powerful impact on maternal perception of feeding options. Several studies highlighted that the degree of exposure to breastfeeding mothers throughout the expectant mothers' life

had a positive influence on their decision to breastfeed (Hoddinott & Pill 1999, Kong & Lee 2004, Moore & Coty 2006, Sheehan et.al. 2003, Stewart-Knox et.al. 2003). Disadvantaged adolescents were more likely to establish negative perceptions from observing role models who breastfed, compared to those who bottle fed their infants (Alexander et.al. 2010, Hannon et.al. 2000). Interestingly the potential for mixed messages from breastfeeding mothers who shared both positive experiences and 'horror stories' (e.g. descriptions of nipple deformities) were reflected in some studies (Alexander et.al. 2010, Lothian 1994, Moore & Coty 2006). The importance of significant female role models in the transfer of information and experiences was a positive factor in both breast and bottle feeding categories.

The *Family and Social Network* theme identified the importance placed on significant individuals in the expectant mothers' environment, reflecting the significant importance of the baby's father in supporting and 'encouraging' the expectant mother in the breastfeeding decision (Alexander et.al. 2010, Barona-Villar et.al. 2009, Gage et.al. 2012, Humphreys et.al. 1998, Kong & Lee 2004, Lothian 1994, Moore & Coty 2006, Stewart-Knox et.al. 2003, Weimann et.al. 1998, York & Hoban 2013). The social network was also important, but conveyed both negative and positive influences highlighting the potentially conflicting nature of the support. Interestingly of the studies that included adolescent participants, only one conveyed positive breastfeeding views relating to their family or social network (Alexander et.al. 2010).

Lifestyle: This theme reflected positive factors influencing bottle feeding decisions. These related to practical aspects of infant feeding, including considerations of future

work and educational needs of the expectant mother, whilst others acknowledged the option of complementary feeding to have greater flexibility (Barona-Villar et.al. 2009, Earle 2002, Gielen et.al. 1992, Lothian 1994, Moore & Coty 2006, Stewart-Knox et.al. 2003, Weimann et.al. 1998). Convenience as a positive aspect was reflected in both breast and bottle feeding, with more of the data attributing this aspect to breastfeeding (Alexander et.al. 2010, Dyson et.al. 2010, Gielen et.al. 1992, Maehr et.al. 1993, Weimann et.al. 1998). Negative breastfeeding factors almost exclusively focussed on the perceived restrictions to family and social life. The perceived lack of facilities to breastfeed or express breast milk both in public and at work was important and created a potential barrier to how the expectant mother was able to visualise herself continuing breastfeeding outside the home (Kong & Lee 2004, Dyson et.al. 2010, Stewart-Knox et.al. 2003). Indeed some participants reflected a belief that breastfeeding would isolate them from their social sphere (Gielen et.al. 1992, Hannon et.al. 2000, Stewart-Knox et.al. 2003).

Feeding in front of others/public was almost entirely focussed on breastfeeding. It was clear that cultural perceptions of the function and perception of the breast permeated every aspect of the infant feeding decision. The majority of thematic codes originated from negatively focussed data relating the 'embarrassment' of breastfeeding (Alexander et.al. 2010, Dyson et.al. 2010, Earle 2002, Gielen et.al. 1992, Hoddinott & Pill 1999, Kong & Lee 2004, Lothian 1994, Moore & Coty 2006, Stewart-Knox et.al. 2003, Weimann et.al. 1998, York & Hoban 2013). Expectant mothers reflected on their own feelings witnessing breastfeeding mothers, and projected this embarrassment to how they perceived others may feel when observing their breastfeeding activity. The

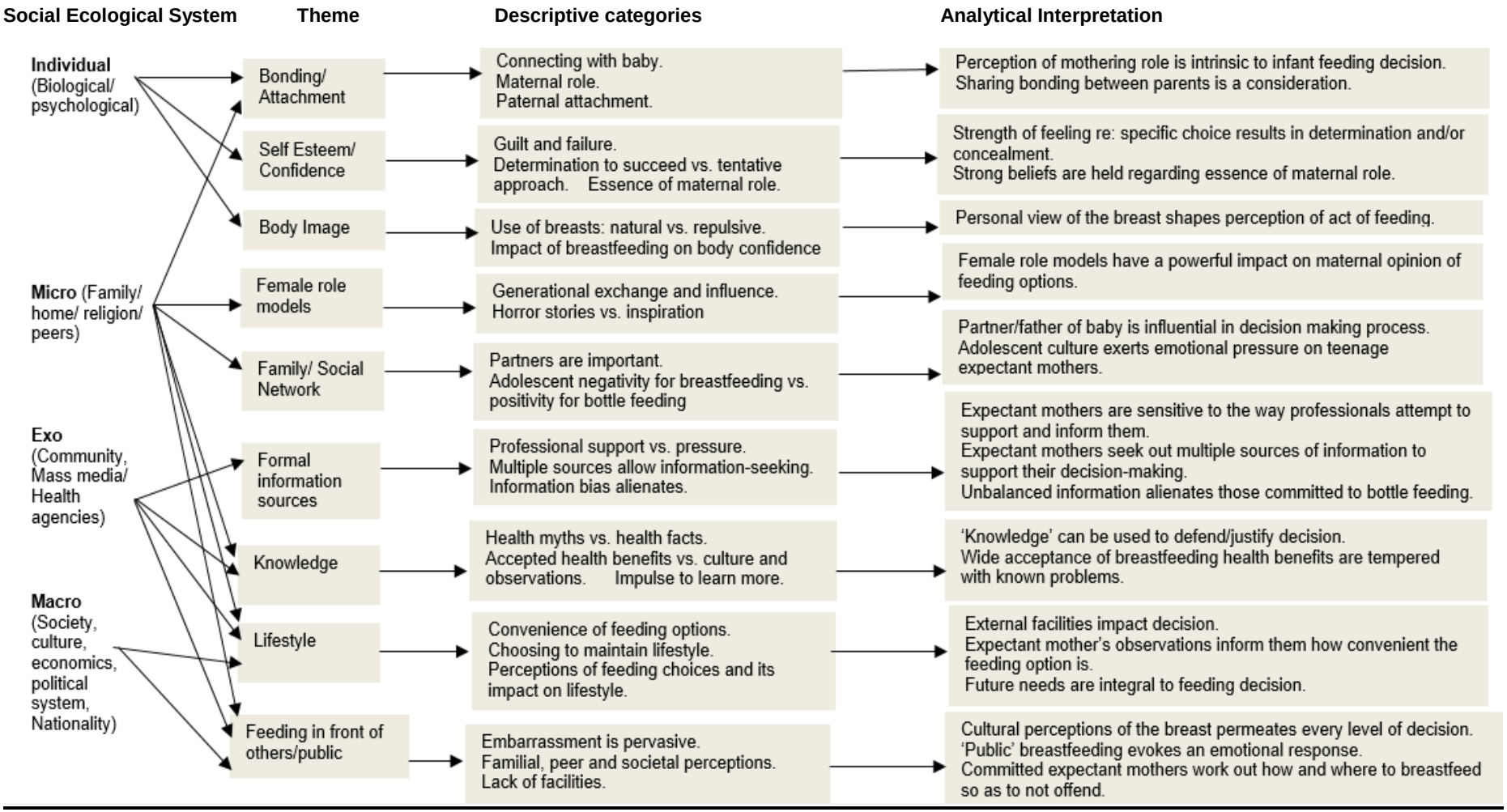
data suggested that adolescent and disadvantaged expectant mothers appeared less comfortable and more critical of women breastfeeding in public (Hannon et.al. 2000).

Knowledge: The knowledge of participants throughout the majority of studies demonstrated that health promotion activities have raised the awareness of the breastfeeding health benefits for mothers and babies. The thematic codes identified that this knowledge is tempered with awareness of the more negative aspects relating to breastfeeding problems (Alexander et.al. 2010, Hannon et.al. 2000, Moore & Coty 2006, Weimann et.al. 1998). Studies that focussed on adolescent and disadvantaged expectant mothers cited views data in the context of personal justification and rationalisation to defend the bottle feeding choice (Hannon et.al. 2000, Weimann et.al. 1998). Knowledge supporting bottle feeding decisions reflected the influence of personal observations and the individual's social network (Barona-Villar et.al. 2009, Hannon et.al. 2000, Sheehan et.al. 2003).

Formal Information sources: The importance of professional knowledge and support regarding breastfeeding decisions, was tempered with expectant mothers' perceptions of the more negative consequences of professional involvement. Over-zealous or judgemental approaches served to concern and alienate expectant mothers (Dyson et.al. 2010, Moore & Coty 2006, Sheehan et.al. 2003, Stewart-Knox et.al. 2003). Some mothers considered the provision of health information was biased towards breastfeeding which prevented them from making a balanced decision and alienated those who were considering bottle feeding (Sheehan et.al. 2003, Stewart-Knox et.al. 2003, York & Hoban 2013).

As the Social Ecological Model was integral to the thematic synthesis it was possible to map the descriptive themes to the 'systems' of the model in order to visualise the interactions between each theme and across each 'system' (fig. 4). This identified that family members and the immediate home environment (the 'Micro' system) had an influence on six of the nine themes (Bonding/Attachment; female role models; family/social network; Knowledge; lifestyle; feeding in front of others/in public). This was followed by the 'Exo' system (community, media and health agencies) which influenced four themes (Formal information sources; knowledge; lifestyle; feeding in front of others/in public). Influences from within the individual themselves (the 'Individual' system) contributed to three themes (Bonding/attachment; self-esteem/confidence; body image) whilst societal, wider cultural and governmental policies (the 'Macro' system) influenced two themes (lifestyle; feeding in front of others/in public).

Figure 4: Interpretive Synthesis



Discussion

This review aimed to identify the range of factors influencing infant feeding decisions as voiced by expectant parents. These factors all merge at varying levels and degrees depending on the expectant mothers' specific circumstances.

The seventeen studies reflected qualitative, quantitative and mixed method studies. To our knowledge there are no similar reviews on this topic. It is possible that some potentially eligible studies were missed in the study selection process, although a comprehensive search strategy was employed including reference checking and hand-searching. Reliability was strengthened by piloting the quality appraisal and data extraction tools and consulting an expert researcher throughout the review process. Three studies were included that collected data in the immediate postnatal period (Kong & Lee 2004, Maehr et al 1993, Weimann et al 1998) as they were considered to have valuable data of relevance to the review. However it is acknowledged that recall bias is a potential issue for these studies.

Whilst the EPPI Centre approach (Thomas & Harden, 2008, Harden et al., 2004) was a strength in that it was more suitable for data synthesis in a mixed method review, it was not possible to be wholly consistent with the process due to this review's exclusive focus on parent views data. Nevertheless, the approach adopted enabled detailed exploration of the data as a whole from the outset. The decision to include studies with varying designs in order to capture the full range of evidence applicable to the review question was a strength, and the diversity of study designs and the varying age groups, socio-economic status, ethnicity and culture of the expectant mothers enabled a broad

perspective of the data in order to address the review question. Furthermore the use of the Social Ecological model throughout the review provided a theoretical consistency to the data extraction and interpretive synthesis.

By taking a Social Ecological perspective, we were able to explore and demonstrate the multiple influences impacting on expectant mothers in the decision-making process. Whilst there exists cultural differences due to the expectant mothers' country of residence and ethnicity, there are some key commonalities in the views of infant feeding voiced by participants across all 17 studies. Their responses create a picture of the challenges and emotional investment inherent in the infant feeding decision. It highlights the juxtaposition of expectant mothers' knowledge of the health benefits of breastfeeding and the realities of cultural, familial and generational influences and practical considerations that impact on her choice.

The findings suggest that the concept of the maternal role is intrinsic in the breastfeeding decision. Consistent with other research (Schmied & Lupton, 2001), to some expectant mothers breastfeeding was central to their perceptions of motherhood, echoed in terminology that defined the expected naturalness and importance of the emotional connection with their baby. Similarly the perception of the maternal role is linked with an expectant mother's beliefs system (Dennis, 1999, Mossman, et al 2008). Commitment and determination were identified by expectant mothers favouring either infant feeding option. However some of the data were also suggestive of insecurities in the breastfeeding decision, and of the guilt or failure should breastfeeding be discontinued or bottle feeding be the primary choice. Indeed

this belief may impact on the mother postnatally. A recent study found that whilst postnatal depression (PND) was lower in women who breastfed, those who were unable to continue yet wished to do so had higher rates of PND, impacting on their long term health and wellbeing (Borra, et al, 2014).

The review identified that the participants' views contributed more data to the negative views of breastfeeding than bottle feeding. This gave a sense that infant feeding was not a balanced choice between two feeding options, but rather a process of weighing reasons for and against breastfeeding. The paucity of data in relation to expectant mothers' negative perceptions of bottle feeding is perhaps evidence of the continuing cultural acceptance of bottle feeding (Dennis, 1999).

Findings further reflected the disparity between the knowledge of health benefits of breastfeeding and the impact of years of culturally established doubt as to an expectant mother's ability to successfully breastfeed. This is evidenced by the many studies in this review that identified expectant mothers being willing to 'try' to breastfeed and others that reflected the numerous negative thematic codes relating to breastfeeding evident in all the themes. Research suggests that there is a possibility that mothers initiate breastfeeding with positive intentions or to briefly appear to try as a response to pressure from professionals and family members and their own perceptions of being a good mother (Murphy, 1999). Certainly studies continue to show a decrease in breastfeeding in the early postnatal period due to various reasons including difficulties experienced by the mother (McAndrew et al 2010, Scott, et al 2004).

An expectant mother's perceptions of the support from various individuals within her environment was also a major factor highlighted by the data in this review. Support, or the lack of it, transcended many of the themes that reflected the external influences on the infant feeding decision. Consistent with other studies the father of the baby played a significant role in supporting and encouraging expectant mothers in their breastfeeding decision-making (Avery & Magnus, 2011, Matich & Sims, 1992).

The peer network and the influence of significant others was of specific importance to adolescent expectant mothers. Data suggested that for some adolescents, peer-pressure influenced negative perceptions of breastfeeding and contributed to maintaining bottle feeding as 'normal' within their group culture. Nevertheless for others, their own mothers and professionals were considered supportive in the breastfeeding decision. It is potentially suggestive of the importance placed on the opinion of peers and significant others linked to the stage of development and the willingness of adolescents to conform to social group norms within adolescent culture (Swanson, et al, 2006).

The relationship between socio-economic and educational status and the infant feeding decision is well-known (Dyson, et al, 2005, Shepherd, et al, 2000, Persad & Mensinger, 2008). This review concurred, with data suggesting that socio-demographic, educational and cultural factors influenced expectant mothers'

perception of the infant feeding choice and their commitment to learn more in order to inform or confirm their decisions.

Perhaps an important factor enabling expectant mothers to assimilate knowledge was the opportunities to observe breastfeeding. Female role models had a clear supportive role in influencing breastfeeding decisions. Findings of the review suggest several expectant mothers within the adolescent and disadvantaged groups saw bottle feeding as 'normal', whilst expectant mothers in other studies rationalised bottle feeding within the context of their historic observations and the transfer of knowledge and practices down the generations or within social groups. Evidence suggests that expectant mothers of any age who had the opportunity to observe breastfeeding in their family and social spheres are more likely to hold positive views and intentions to breastfeed themselves (Mossman et al., 2008, Shortt, et al, 2013).

This review has highlighted that some mothers seeking information about bottle feeding felt alienated by the overt promotion of breastfeeding. Clearly this reflects the International policy changes that have taken place following the 1990 Innocenti declaration (WHO 2003) and the International Code into the Marketing of Breast-Milk Substitutes (WHO, 1981). There is an acknowledgement by most of the expectant mothers considering breastfeeding that professionals were supportive and essential sources of information. However some expectant mothers perceived that professionals pressurised them, or judged them for considering bottle feeding. This sensitivity may reflect how public health policy is challenging cultural norms.

Thematic codes also strongly highlighted the negative factors of embarrassment and the unacceptability of feeding in public. This may relate to the cultural expectations and generational exchange of information between families and social groups that consider either feeding option the 'norm'. Prevailing cultural perceptions of the lack of acceptability of breastfeeding in front of others or in public may have had a counteractive influence on breastfeeding decisions (Shepherd et al., 2000). It is acknowledged that the data would have reflected the societal norms at the time, as some of these studies were conducted prior to breastfeeding in public being protected by law in many countries (National Conference of State Legislatures 2014, Government Equalities Office 2010, Australian Breastfeeding Association 2014).

Implications for practice

Whilst there is extensive policy focus on increasing breastfeeding rates (PHE 2012), the findings of this review have drawn attention to expectant mothers' negative perceptions of breastfeeding. This demonstrates the continuing challenge to engage a variety of approaches to establish breastfeeding as 'normal' (UNICEF 2009). Mapping the Descriptive themes to the 'systems' of the Social Ecological Model identified the sources of influences on the infant feeding decisions of expectant mothers which highlighted the key role expectant fathers and female role models play in the decision-making process. Front-line staff continue to be pivotal in not only understanding what influences the expectant mother in her decisions, but also being able to extend the support to her significant others who are pivotal to the decision-

making process. Through innovations in practice delivery, engaging women and their families in service provision will ensure resources are targeted effectively.

Finally it is suggested that research into expectant fathers' views of infant feeding decisions antenatally is an area for further study. Building an evidence base of expectant parents' views will enable researchers to triangulate data with observational studies and also has the potential to map cultural changes in parental views of both breast and bottle feeding.

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