Maternal attitudes towards breast and bottle feeding in a regional community

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Background: Based on research demonstrating the many benefits of breastfeeding, it is recommended babies be exclusively breastfed from birth to at least six months of age. However, despite these known benefits, many women choose to bottle feed or cease breastfeeding before six months. **Aim:** To survey women in order to determine factors associated with their attitudes and choice to bottle feed or breastfeed their children, with the aim of identifying areas to target education to improve breastfeeding rates or duration. **Methods:** Anonymous surveys were distributed to a convenience sample of 106 adult female patients selected from a suburban general practice. MS-Excel and Epi Info 3.5.3 software package were used for data management. Chi square was used for analysis. **Results:** The response rate was 94.3% (n=100). There were trends suggesting an association between income and the respondents' choices (p=0.26); and income and the respondents' mothers' choices (p=0.51). Respondents were significantly more likely to choose the feeding method their own mother used (p=0.01). **Discussion:** Income and respondents' mothers' choice regarding breastfeeding were identified as factors possibly associated with respondents' attitudes and choice. Hence awareness of individual family dynamics may assist in targeting prenatal education to help increase rates of breastfeeding. A large proportion of respondents chose to bottle feed and also believed that the bottle was as good as breastfeeding. The needs of this group also need to be met. **Conclusion:** To increase breastfeeding rates, individualised prenatal education as well as supporting women through their breastfeeding problems is a likely requirement.

Introduction

In Australia, the National Health and Medical Research Council (NHMRC), in agreement with the World Health Organisation (WHO) guidelines, recommend exclusive breastfeeding from birth up to six months of age. [1,2] Exclusive breastfeeding means breastfeeding only, with no complementary bottle feeds. Breastfeeding is recommended to be continued for up to two years and beyond. [3]

There are many benefits of breast feeding for mother, child and society. For the baby, breast milk assists with immune system development, thus reducing the risk of morbidity and mortality. [1] Breast milk also reduces the risk of obesity in childhood, [4,5] chronic diseases, [6] Sudden Infant Death Syndrome (SIDS), [7] childhood cancers [1] and psychiatric disorders. [8] Additionally, there is some evidence that being breastfed may reduce the incidence of high cholesterol and hypertension. [9] Breastfeeding can improve eyesight [10] and cognitive development with an increase in IQ of 2-5 points on standard IQ tests. [11-14]

For the mother, breastfeeding promotes infant bonding and attachment. [1,15] It also leads to quicker recovery after childbirth, reduces risk of ovarian cancer and possibly reduces the risk of breast cancer, post-menopausal hip fractures, osteoporosis and maternal depression, although further research is required. [16,17] Breastfeeding also reduces the risk of having another baby within a short period of time. Short intervals between pregnancies may lead to adverse outcomes as the mother's nutritional reserves need at least eighteen months to be restored. [18,19]

In terms of society and the economy, studies have shown that if an infant is not breastfed or is weaned prematurely, there are increased

healthcare costs for associated illnesses. [1,20] Breast milk is free whereas formula is not. [21] Environmental benefits to society result from reduced waste associated with the production, transport and packaging of artificial baby milk, bottles and teats. [22]

However, despite these benefits there are concerns that breastfeeding rates are far from optimal. Studies have shown that in Queensland, only 10% of children were exclusively breastfed at five months of age. [1,23] In Western Australia and New South Wales (NSW) children aged zero to four years were exclusively breastfed for six months or more at a rate of 12% and 18% respectively. [1,20,24] There is evidence that the rates of breastfeeding are not uniform across socioeconomic areas. In the 2005-06 NSW population health survey, exclusive breastfeeding of children at six months of age was statistically lower for infants with mothers without tertiary qualifications, from lower socioeconomic areas and in those aged younger than 25 years. [1,24] Women from higher socioeconomic groups were more likely to breastfeed and continue breastfeeding for longer than women from lower socioeconomic groups. [25-29]

In 2005, a project was approved to develop a set of national priority Headline Indicators to monitor the health, development and wellbeing of Australian children and to explore processes to facilitate ongoing data collation, analysis and reporting. One of these priority areas is the proportion of infants exclusively breast fed at four months of age. The Australian Institute of Health and Welfare (AIHW) has identified a lack of current national data providing information on the proportion or duration of infants exclusively breastfed. [1] The Australian Bureau of Statistics (ABS) has also identified the need for further research regarding the prevalence and duration of breastfeeding. [1,30]

Therefore, whilst the importance of breastfeeding is well recognised, data on breastfeeding rates and research on factors and attitudes associated with choice of feed are limited. This project is warranted to quantify and explore these under-researched issues.

Methods

This project received approval from the Human Research Ethics Committee at The University of Wollongong.

Materials

Development of the survey tool was informed by identifying independent variables of likely influences for feeding choice selected from a review of the literature. [19,22,25,31-34] The survey was formed through the use of multiple choice check boxes to allow ease of question answering; however there was an opportunity for free writing comments. The survey was then piloted for acceptable readability by a research supervisor, a practice doctor and a few patients.

Data collection

Surveys were collected over a two week period during normal business hours for the medical centre. Inclusion criteria to the study were: females between the ages of 18 and 50, who lived in postcode 2530 and had children for whom they had to make a choice of feeding type. Participants were identified through opportunistic questioning at an Illawarra Medical Centre. One hundred-and-six surveys were distributed. The aim of the research was explained to the participants and if they were interested in participating, a participant information sheet was given. If they agreed to proceed, an anonymous survey was given for them to fill out. Women had the choice to not complete the survey after they had seen it. These surveys were shredded appropriately. Completed surveys were collected by the researcher, who returned to collect the survey after five minutes, ensuring a high proportion of returned surveys.

Table 1. *Sample attributes.*

Characteristics	n (%)
Age	
18-25	7 (7)
26-30	20 (20)
31-35	20 (20)
36-40	19 (19)
41-45	15 (15)
46-50	19 (19)
Marital status	
Single	13 (13)
Separated	6 (6)
Defacto	21 (21)
Married	60 (60)
Education	
< Year 10	10 (10)
Year 10	32 (32)
Year 12	13 (13)
TAFE	34 (34)
Undergraduate	6 (6)
Postgraduate	4 (4)
Blank	1 (1)
Income	
<$25k	19 (19%)
$25k - $50k	24 (24%)
$50k -$75k	25 (25%)
$75k +	30 (30%)
Blank	2 (2%)

Table 2. *Infant feeding choices.*

Respondents'	n (%)
Choice of feeding	
Bottle	32 (32)
Breast	43 (43)
Mixed/swapped	25 (25)
Believe to be better	
Bottle	4 (4)
Breast	72 (72)
Same	22 (22)
Blank	2 (2)
Time	
<1 month	23 (23)
<3 months	18 (18)
<6 months	15 (15)
<1 year	15 (15)
<2 years	6 (6)
≥2 years	1 (1)
Blank	22 (22)
Mother's choice	
Bottle	37 (37)
Breast	39 (39)
Mixed	10 (10)
Unsure	14 (14)

Analysis

Quantitative data from the survey were entered into MS-Excel (Microsoft Corporation., Washington, US) and then imported into Epi Info 3.5.3 (Centers for Disease Control and Prevention, Atlanta, US) for analysis. The Chi square test was performed to determine the statistical significance in differences in proportions.

Results

Of the 106 surveys distributed, four were not returned and two were excluded due to conflicting responses, resulting in 100 surveys being included in the data analysis with an effective response rate of 94.3%. Conflicting responses were due to selection of bottle feeding as their choice of feeding method; however respondents had also checked boxes for time breastfeeding.

There was a generally even distribution of respondents across six age groups, other than the 18-25 years age group which was relatively under-represented with 7% (n=7) of respondents. Over three-quarters of the sample (81%) were in a defacto or married relationship. Over half (61%) had a year 12, TAFE or University education (Table 1).

Forty-three percent (n=43) of the respondents chose to breastfeed, yet 72% (n=72) of the sample believed breastfeeding was best. The proportion of respondents breastfeeding declined with increasing time from delivery with 23% (n=23) breastfeeding for less than one month, 15% (n=15) less than one year and only 1% (n=1) breastfeeding for more than two years. The choices of the respondents' mothers regarding breastfeeding were nearly evenly divided with 37% (n=37) choosing to bottle feed and 39% (n=39) choosing to breastfeed (Table 2).

Respondents could choose multiple options for four questions in the survey: reasons for bottle feeding, reasons for breastfeeding, reasons for stopping breastfeeding and sources of information. Most reported reasons for bottle feeding were that the baby was still hungry (n=26), that milk did not come through (n=16) and that breastfeeding hurt (n=15) (Figure 1). Reasons for breastfeeding most commonly reported

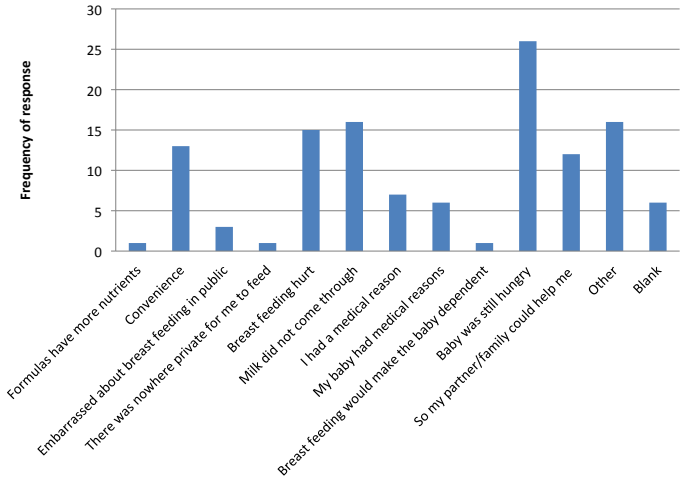

Figure 1. *A graph indicating reasons for bottle feeding.*

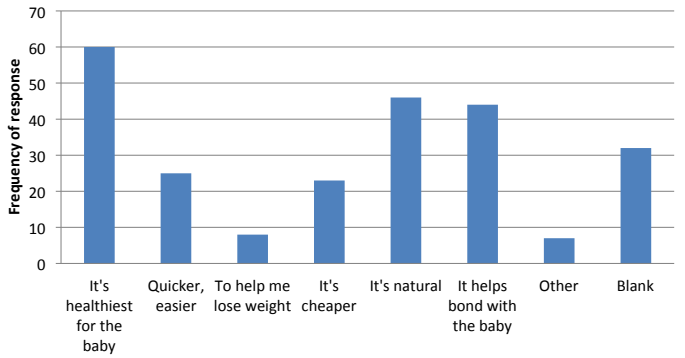

Figure 2. *A graph indicating reasons for breastfeeding.*

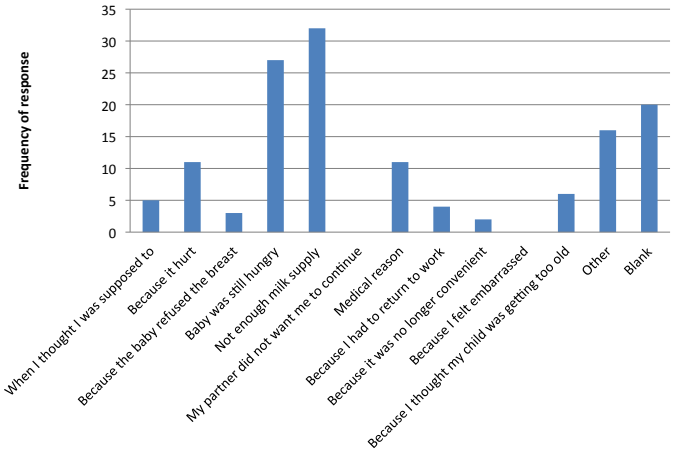

Figure 3. *A graph indicating reasons for stopping breastfeeding.*

were that it was perceived to be healthiest for the baby (n=60), natural (n=46) and that it helped bonding with the baby (n=44) (Figure 2). The most common reasons for stopping breastfeeding were due to low milk supply (n=32), because the baby was still hungry (n=27), because breastfeeding hurt (n=11) and for medical reasons (n=11) (Figure 3).

Regarding breastfeeding information, 74% (n=74) believed they had enough information; 21% (n=21) felt they did not get enough information and would have liked more, and 2% (n=2) stated that they did not get enough information but did not want to know any more. The most reported source of information was from a midwife or lactation consultant or early childhood nurse. This was followed by the antenatal clinic and a doctor (Figure 4).

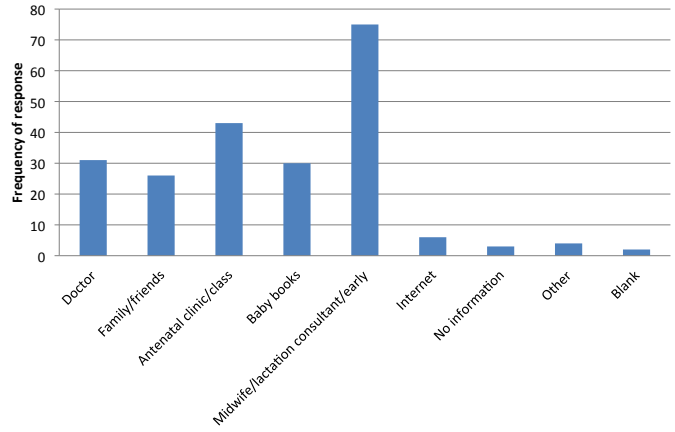

Figure 4. *A graph indicating information sources.*

All but one of the 18-25 year old women bottle fed or mixed/swapped. Of those whom tried to breastfeed in this age group, the maximum duration was less than three months. No respondents under 35 years of age breastfed beyond one year. Breastfeeding rates were highest in 26-30 year olds and in those with higher incomes (Figure 5).

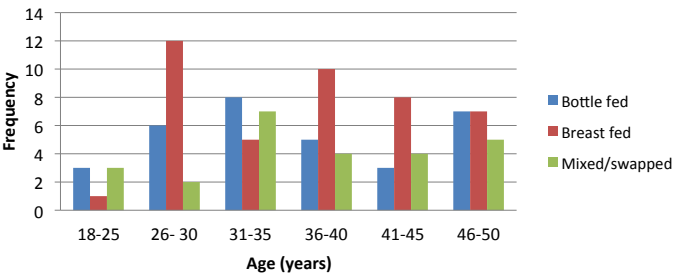

Figure 5. *A graph indicating the choice of feed in age distribution.*

The <$25,000 income group produced the lowest number of respondents who breastfed, although the difference between this group and the others was not statistically significant (chi square 4.179, df 3, p= 0.24). Of those with an income of less than $25,000, seven chose to breastfeed and eight chose to bottle feed, compared with those with an income of $75,000+ where fifteen chose to breastfeed and eight chose to bottle feed. However, this difference failed to reach statistical significance (chi square 1.282, df 1, p=0.26) (Figure 6).

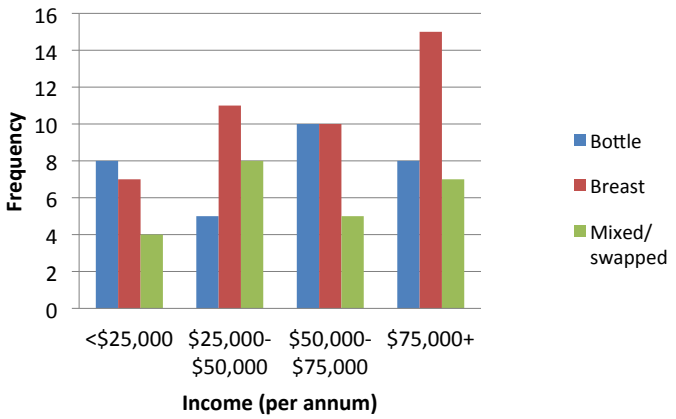

Figure 6. *A graph indicating the choice of feed in income distribution.*

The choice of the respondents' mother was associated with the respondents' choices. Of the 56 respondents who were aware of their mother's breastfeeding choice, 43% (n=24) breastfed when their mother breastfed and 25% (n=14) bottle fed when their mother bottle fed. This compared with 19.5% (n=11) who breastfed when their mother bottle fed and 12.5% (n=7) who bottle fed when their mother breastfed. These differences were statistically significant (chi square 6.595, df 1, p= 0.01) (Table 3).

Table 3. *Respondents' choices and their mothers' choices.*

		Respondents' choice	
	Total= 56	Breast	Bottle
Respondents' mothers' choice	Breast	n=24	n=7
	Bottle	n=11	n=14

Low income (<$25,000) was associated with an increased proportion of the respondents' mothers bottle feeding as compared with the highest income group ($75,000+); however, this association failed to reach statistical significance (chi square 3.796, df 1, p=0.051) (Figure 7).

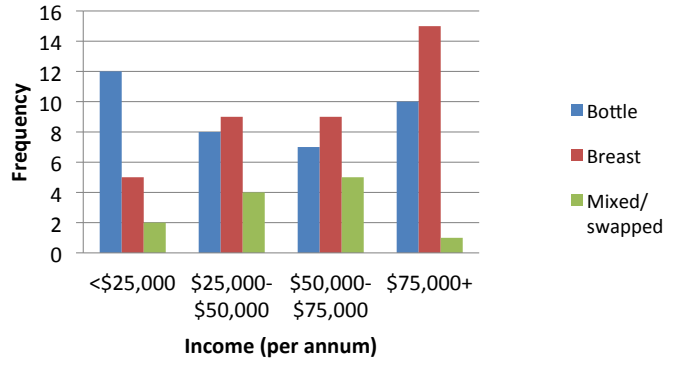

Figure 7. *A graph indicating the choice of feed by the respondents' mothers in income distribution.*

The internet was used only by those under the age of 35 for feeding information. No 18-25 year olds sought information from their family or friends and only one respondent in this age group would have liked more information. Respondents whose mothers chose to bottle feed, more frequently sought information across all sources except for family and friends; however, this did not reach statistical significance (chi square 4.53, df 5, p= 0.48) (Figure 8).

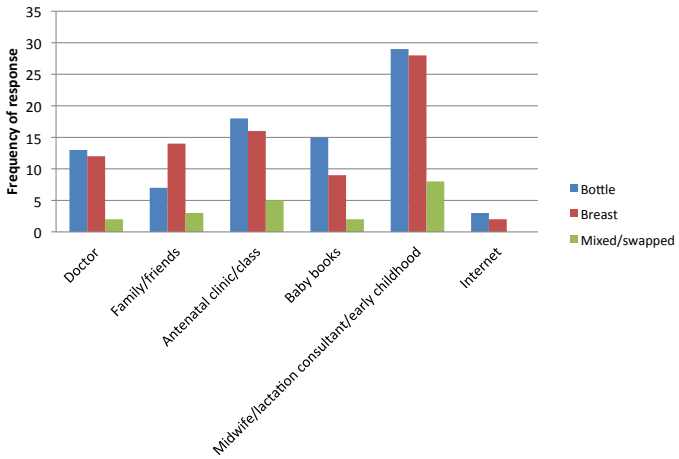

Figure 8. *A graph indicating the information sources in respondents' mothers' choice distribution.*

Discussion

Overview

This study demonstrated a number of interesting findings. Firstly, there were trends suggesting that income may be associated with the respondents' mothers' choices and the respondents' choices, with a higher proportion of respondents with the lowest incomes having mothers who bottle fed, and a higher proportion of those with the highest incomes choosing to breastfeed. These findings approached statistical significance for the income/respondents' mothers' choice association. Secondly, respondents were more likely to choose the feeding method chosen by their own mother, with these results being statistically significant. Previous research has shown breastfeeding to be positively associated with the respondent having also been breastfed. [35,36] This suggests that feeding choices are highly complex in nature, with many factors influencing attitude, choice and duration including family dynamics.

Breastfeeding initiation and cessation

Specific initiation rates were not assessed in this study; however it has been previously demonstrated that Australia appears to have a high rate of breastfeeding initiation varying from 72-92%. [35,37,38-42] Despite the typically high rate of initiation, exclusive breastfeeding rates have been shown to consistently and significantly decline thereafter. This study found that 41% had stopped breastfeeding by three months and a further 15% by six months. This is similar to global trends as studies have demonstrated 42-63% had ceased breastfeeding by three months and 23-58% at six months. [38,41-43] However, there are researched benefits to extending exclusive breastfeeding until at least six months. [44]

The most common reasons for breastfeeding and for stopping breastfeeding in this study corresponded with other study responses. Insufficient milk supply is the most commonly reported reason for stopping in the literature. [41,43,45-51] Other frequent responses in the literature included that breast milk alone did not satisfy the baby, difficulty nursing, sore nipples, that the mother felt it was the right time to stop and that she wanted help with feeding. [38,51,52]

Reasons described in the literature did seem to change at time of cessation. If stopping before three months, problems were usually associated with lactation, such as latching, sucking and not enough supply. [52] If stopping after three months, the problems were usually due to conflicts with the mother's lifestyle; however, concern about milk supply continued. [52,53] In this present study the most common reason for stopping breastfeeding was due to concern about not enough milk supply. However, two studies from developed nations demonstrated that during the early months of breastfeeding, 50% of women perceived their milk supply to be low, although their infants seemed satisfied and were not underweight. [52,54,55] Studies performed to ascertain the actual percentage of mothers with poor supply found <5% were unable to produce enough milk. This discrepancy may be due to the lack of normal lactation knowledge or technical difficulties in feeding, rather than an actual inability to produce enough milk. [52,56-59]

Bottle feeding

While there is much research surrounding breastfeeding, the needs of bottle feeding mothers should not be ignored, as 32% in this study bottle fed and 25% chose to mix or swap feed. These results were similar to the Unicef baby friendly initiative, which showed that a vast majority receive some formula milk in first year of life. [60-62] There are many different thoughts expressed by women from the literature. Some women felt breastfeeding had been romanticised in that their idealised expectations were often different from the reality of their experience. [37,63] A number of women who chose to formula feed had experienced negative emotions and a sense of failure once making the decision to bottle feed. [60] One woman in this study commented: "Because it did not come naturally to me, I felt like a failure. [This] could have led to post natal depression. There was a lot of pressure to breastfeed by midwives and nurses. It was frowned upon [when I chose] to bottle feed. I was given little support when I chose to use the bottle."

The proportion of women bottle feeding may be influenced by their beliefs. Twenty-two percent of women in this study thought that bottle feeding was as good as breastfeeding. This was comparable with 20.4% in the literature. [46]

Information and support

The most frequent source of information from this study and the literature was healthcare providers. From the previous research, 87-92% of healthcare workers involved in obstetric care talked about breastfeeding. [38] This seems to be an expected role for healthcare workers, as one woman in this study commented:

"More help needs to be given to breastfeeding mums on the maternity ward- post birth [for those experiencing problems]. Mothers should stay on the ward longer if their milk doesn't come through."

According to the literature, 90% of nursing mothers would have welcomed a midwife home visit if it had been available. [43] A review of breastfeeding strategies shows that lactating women who receive professional support breastfeed for longer than those who do not [51,64]. Factors identified in the literature that would have encouraged bottle-feeding mothers to breastfeed included more information in prenatal classes, television, magazines, books and family support. [65]

This study indicated that women were more likely to choose the type of feeding that their mother choose. From the literature, the nursing mother's mother was seen as an important source for empathy and approval and was influential to their confidence in continuing to breastfeed and in introduction of solids into the child's diet. [37,35,66,67] In this context, it is important to note that more confident women were more likely to choose breastfeeding, to persist when confronted with difficulties, to employ self-encouraging thoughts and to react positively to perceived difficulties. [41] Conversely, if a woman's mother was unsupportive, her attempts to breastfeed may have been undermined. [37,68] This influence was even more prominent for women of low income. [36] It is interesting to note that in this present study there was also a trend towards an association between the respondents' incomes and the respondents' mothers' choices. In this instance, income may be a generational indicator of social attitudes and learned behaviours rather than a direct cause of reduced breastfeeding.

Although many women experienced difficulties with breastfeeding, the literature indicates that many felt unprepared for the difficulties. [37] Breastfeeding rates might be improved upon by supporting women through these problems. One woman in this study reported:

"Women should be advised about breastfeeding problems. There is a

lot of talk about it being best for baby, but not enough about things that can affect it. This leaves you feeling [like] a failure and [this] is why I believe most people give up. If they were more prepared they may [have persisted]. As a mother who experienced difficulty with my first child, it was only through personally seeking info and determination that I was able to feed for 8.5 months."

Limitations of the study

Limitations in this study included not reaching statistical significance for some factors which appeared to have trends, such as income compared with personal choice or respondents' mothers' choice. This is possibly due to the modest sample size. As this was a cross-sectional study, it was not possible to determine causative relationships. In addition, the survey instrument had not been previously validated. There were also a number of questions which could have been better formatted; for example, it may have been helpful to stipulate if the duration of breastfeeding included mixed feeds and to qualify the age at the time of feeding choice rather than at the time of survey.

Other factors not tested in this study could be considered as positive influences for rates and duration of breastfeeding. These include feeding choice made at booking-in interview, encouragement from the baby's father or woman's mother and positive maternal breastfeeding attitudes and self efficacy. [41,51,69-76] These attitudes strongly correlated with maternal age, level of education, income and marital status. [69,71,72] This study suggests there may be intermediary factors involved and that factors such as income and the mother's influence may be markers for cultural and learned attitudes which may in turn influence choice and duration of breastfeeding.

Conclusion

In conclusion, the value of this research is in identifying factors which are associated with feeding choice in order for interventions to be targeted to those pregnant and lactating women most likely to be in need of such programs. Our study demonstrated that respondents' mothers' choices regarding infant feeding were associated with respondents' choices. In combination with other research, this suggests that an important time for intervention and education is during the antenatal period when feeding choice is often made, and when there are opportunities to address expecting mothers' beliefs. [69,75,76] It may also be important to educate the influential members in the mother's life such as her partner and her mother. It has been identified that women who make the choice to breastfeed, particularly vulnerable groups such as young mothers, those with low incomes and mothers with low confidence, need to receive ongoing support and education so that they feel confident to deal with potential feeding problems. This ideally involves home visits postnatally by a person trained to help with potential feeding problems. This research contributes to an understanding that individualised education and support across the entire pregnancy and postnatal period are likely to be key factors in influencing attitudes and choices towards whether to breastfeed or bottle feed.

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Conflict of interest

None declared.

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