Differences in maternal characteristics and their associations with breastfeeding attitudes among primiparous mothers

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PII: S0266-6138(21)00010-3
DOI: https://doi.org/10.1016/j.midw.2021.102931
Reference: YMIDW 102931

To appear in: *Midwifery*

Received date: 29 March 2020
Revised date: 26 October 2020
Accepted date: 15 January 2021

Please cite this article as: Nurul Husna Mohd Shukri Senior Lecturer , Jonathan Wells Professor , Mary Fewtrell Professor , Differences in maternal characteristics and their associations with breastfeeding attitudes among primiparous mothers, *Midwifery* (2021), doi: https://doi.org/10.1016/j.midw.2021.102931

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Maternal factors differences and their associations with breastfeeding attitudes among first-time mothers.

Cover page

1) Manuscript title:

Differences in maternal characteristics and their associations with breastfeeding attitudes among primiparous mothers

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4) word count of the text: 3520 words

5) conflict of interest disclosure

The authors have no conflicts of interest to disclose.

6) Acknowledgments

We are thankful to all mothers and their infants who participated in study and to the Ministry of Health Malaysia for allowing the recruitment to be carried out at selected antenatal clinics in Selangor.

7) Funding

This study was supported by a Ph.D scholarship (NHMS) from Ministry of Higher Education Malaysia (Project no: KPT(BS) 840412075626) and funds from the Childhood Nutrition Research Centre, UCL Great Ormond Street Institute of Child Health. MF is supported by the Great Ormond Street Hospital Children's Charity.

8) Ethics approval

Ethics approval was obtained from the Medical Research Ethics Committee (MREC), Ministry of Health Malaysia (ID: 13-841-16720) and University College London (UCL) Ethics Committee (ID:4883).

ABSTRACT

Background: The benefits of breastfeeding are well documented, yet substantially below half of all mothers globally meet the recommendation to exclusively breast-feed for 6 months. **Objective:** This study aimed to examine whether there were differences in maternal factors, including maternal characteristics and breastfeeding attitudes, between those who were eligible versus non-eligible to be included in a randomised trial, as exclusive breastfeeding was the eligibility criteria for the trial. It also aimed to investigate associations between maternal factors and breastfeeding attitudes. **Method:** Primiparous pregnant mothers (n=88) completed questionnaires on demographic factors including maternity care and breastfeeding attitude using self-administered questionnaire and Iowa Infant Feeding Attitude Scale (IIFAS). Two weeks post-birth, mothers were screened for eligibility to be included in a randomised trial including assessing for exclusive breastfeeding (EBF). Findings were compared between inclusion (all EBF mothers) and exclusion groups (non-EBF). **Results**: Inclusion group mothers were significantly younger than those in the exclusion group (26.7±2.8 v 28.5±2.5, p=0.007) and the majority had their husband as the primary maternity care person after birth (X^2=12.8, p=0.01). Inclusion group mothers had a more positive perception toward breastfeeding in public and at work on the IIFAS scale (p<0.05). The overall IIFAS score was positively associated with higher breastfeeding confidence (r=0.285, p=0.008), education levels (r=0.31, p=0.003), household income (r=0.32, p=0.003), and age (r=0.28, p=0.008). **Conclusion:** EBF mothers (inclusion group) tend to be younger, had husband as primary care, and have more positive perception towards breastfeeding outside home. Overall, maternal characteristics and paternal support could influence breastfeeding practices and should be targeted for future intervention. Maternal attitude and perceptions about breastfeeding in public could be improved to encourage exclusive breastfeeding.

Keywords: Breastfeeding attitude, breastfeeding efficacy, maternal factors, paternal support, lactation

INTRODUCTION

The benefits of breastfeeding for the short and longer-term health of the infant are well documented in systematic reviews and meta-analyses (Horta, Bahl, Martines, & Victora, 2007; Van Rossum, Büchner, & Hoekstra, 2005; Victora et al., 2016). Inadequate breastfeeding in the first 6

months was estimated to be responsible for 1.4 million child deaths and 44 million disability-adjusted life years worldwide (Agostoni et al., 2009; Black et al., 2008). Increasing global breastfeeding rates could reduce the ill-health burden globally, and could save more than 800 000 young children's lives annually (Rollins et al., 2016; Victora et al., 2016). Moreover, increasing breastfeeding rates could also reduce hospital admissions and cut treatment costs for childhood illness (Rollins et al., 2016). Hence, the promotion and support of breastfeeding are considered an international public health priority.

However, despite many initiatives designed to promote and protect breastfeeding, it is widely recognised that breastfeeding rates worldwide are still low and far below target levels (Rollins et al., 2016). UNICEF and the *Lancet* series reported that less than half of the world's population exclusively breastfeed their infants (0-5 month), with a global rate of 36% (Rollins et al., 2016; UNICEF, 2012). The *Lancet* series estimated that the overall rate of exclusive breastfeeding at five months in developing countries was only 37%, despite it being higher than the average rate in high-income countries. In Malaysia, the rate has increased from 29% in 2006 to 47% in 2018, however, it is still below the national and world target levels by 2025 (Fatimah, Siti Saadiah, Tahir, Hussain Imam, & Ahmad Faudzi, 2010; World Health Organization, 2017).

Multiple factors could influence breastfeeding practice, including maternal characteristics such as age, parity, education level and socioeconomic status, as well as other maternal factors such as breastfeeding attitudes and perceptions, intention to breastfeed, sources of support, and maternity care. Modifiable factors such as maternal psychological state, and also attitude, perception, intention and confidence related to breastfeeding are more likely to influence primiparous mothers, and yet could also be targets for intervention during pregnancy (Persad & Mensinger, 2008; Scott, Shaker, & Reid, 2004). Some studies also suggested that maternal perception and psychological state, as well as breastfeeding attitudes could be stronger predictors of exclusive breastfeeding than

sociodemographic factors (Mohd Shukri, Wells, & Fewtrell, 2018; Scott et al., 2004), hence it is important to identify target groups or certain maternal characteristics that suggest a need for intervention. In addition, specifically in Asian countries, it is common to practice a traditional confinement period during the postpartum period (Withers, Kharazmi, & Lim, 2018). This cultural practice involves the use of herbs, heat, massage and specific dietary intakes, as part of home maternity postpartum care, and mothers are encouraged to stay at home for a specific confinement period, perceived as a birth recovery period (Fadzil, Shamsuddin, & Puteh, 2016; Withers et al., 2018).

Therefore, this study aimed to examine associations of maternal factors, including sociodemographic, characteristics, and maternity postpartum care with breastfeeding attitudes during pregnancy among primiparous mothers in Malaysia. The study also provides baseline data for a randomised trial where only exclusive breastfeeding mothers (as part of the eligibility criteria) were included in the trial (Shukri, Wells, Mukhtar, Lee, & Fewtrell, 2017). We aimed to compare characteristics between mothers that were eligible (exclusive breastfeeding mothers) and non-eligible (non-exclusive breastfeeding or non-intention to exclusive breastfeeding after birth) to be included in a trial studying a breastfeeding relaxation intervention. Hence, we aimed to identify risk factors or target groups for non-exclusive breastfeeding, specifically among first-time mothers.

MATERIALS AND METHODS

Study design

This was a cross-sectional study including data collected as part of the baseline data for a randomised controlled trial named Mother-Offspring-Milk-Study (MOMS) (Mohd Shukri et al., 2019; Shukri et al., 2017), which investigated mother-infant signalling during breastfeeding using a relaxation intervention.

Study population and recruitment

A total of 244 pregnant mothers were approached and screened during their third trimester at antenatal clinics in Selangor and Kuala Lumpur, Malaysia, of which only 88 mothers (36%) were eligible and agreed to participate in the study as the baseline population for the trial. A majority of women did not meet the specific eligibility criteria of intending to stay within Selangor in the first-four months postpartum since many would stay at their parents' house (outside Selangor) after giving birth, which is a normal practice in the country.

The second screening was done after the 88 mothers had delivered their babies, and only 64 mothers (who were exclusively breastfeeding) and their infants (full-term baby at birth) remained eligible. As shown in Figure 1, of the 24 mothers that were non-eligible at the second screening, the majority of participants (n=19/24; 79%) were not able to exclusively breastfeed or did not feel confident or intend to exclusively breastfeed, or did not want to participate due to eligibility criteria after birth. The other 5 mothers (21%) were non-eligible due to having a low birth weight infant or health-related issues. Hence, these 5 mothers were not included in the analysis.

All mothers that were enrolled into the MOMS trial (n=88) at baseline were categorised into two groups: 'exclusion' and 'inclusion'. The exclusion group comprised mother-infant dyads who were not eligible for the second phase of the study (n=19) and who were thus excluded prior to randomisation (non-exclusive breastfeeding or no intention to exclusively breastfeed); whereas the inclusion group comprised those who were eligible (all exclusive breastfeeding mothers, n=64) for randomisation for the next phase of the trial.

Study procedures

All mothers were assessed for sociodemographic background and attitudes towards infant feeding during late pregnancy using self-administered questionnaires. Breastfeeding practice was assessed by phone call or online communication after mothers gave birth. Ethics approval was obtained from the university (deleted for anonymity) and the country's Ministry of Health (deleted for anonymity). Written consent was obtained from each participant during the recruitment (initial phase screening). At recruitment, mothers were informed about the second screening after birth regarding the eligibility criteria of the MOMS trial.

Maternal characteristics

Sociodemographic data included age, marital status, ethnicity, educational levels, household income and maternal parity. Information on maternity care and postpartum traditional practices were also obtained from the questionnaire, such as questions regarding the main person responsible for maternity care at home during the postpartum period, as well as duration and compliance with regard to practicing the traditional postpartum confinement. The descriptive characteristics of the study population were also compared with the Malaysian population, of similar age and region (Amran, 2015; Department of Health Selangor, 2015; Department of Statistics, 2011; Hasan, 2015; Malaysia Planning Division, 2015).

Breastfeeding attitudes and practice

Breastfeeding attitudes were assessed including maternal perception towards infant feeding using the Iowa Infant Feeding Attitude Scale (IIFAS) (Mora, Russell, Dungy, Losch, & Dusdieker, 1999). The mothers rated all questions (17 items) on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total attitude scores could range from 17 (indicating positive attitudes toward formula feeding) to 85 (reflecting positive attitudes towards breastfeeding) (Mora et al., 1999).

Participants were also asked about their intention regarding the length of breastfeeding and their confidence level in achieving their breastfeeding goal. At 2 weeks after birth, breastfeeding practice was assessed to determine the prevalence of exclusive breastfeeding.

Statistical analysis

Descriptive data were presented as frequency and percentages, and were followed up with univariate analysis (Chi-square or Fisher Exact). Continuous data were checked for normality, which data were presented as mean (standard deviation) or median (inter-quartile range). Comparisons between inclusive and exclusive groups were made using independent t-test or Mann-Whitney test. Associations between variables were assessed using Pearson-Product or Spearman Rank correlation. The level of statistical significance was set at $p<0.05$.

RESULTS

Socio-demographic background

Table 1 shows the maternal characteristics of the study population and the reference population data for Selangor, Malaysia. The majority of the study population were Malay (n=76; 91.6%), aged between 26 to 30 years (n=53; 63.9%), and highly educated (n=57; 68.6%), with the highest proportion achieving tertiary level. In contrast, the national data showed the percentage of similar age group women was half that of the study population, and the majority of the women in Selangor attained their highest education at school or pre-university college (63%) (Amran, 2015). Nevertheless, the household income of the study population was approximately similar to that of the Selangor population, with the majority having a total household income between RM1500 (370 USD) and RM8000 (1900 USD) (Hasan, 2015). Similarly to the National reference data, more mothers in the study gave birth at government hospitals (n=49; 59%) rather than private hospitals (n=34; 41%) (Department of Health Selangor, 2015). All mothers indicated that they would be practicing the

postnatal traditional postpartum confinement for an average duration of 44 days, with a range from seven to one hundred days. Thirty-six mothers (43.3%) indicated that they would comply with the traditional postpartum practice at a strong level. In terms of maternity care, 28 mothers (33.7%) were mainly being taken care of by their husband and 43 mothers (51.8%) were mainly being taken care of by their parents during the postpartum period (Table 1).

Within the whole study population, there were no significant differences between groups (inclusion vs exclusion) for socio-demographic variables except age (Table 2). Mothers in the inclusion group were significantly younger than those in the exclusion group (26.7±2.8 v 28.3±2.7, p=0.025, CI: 0.22, 3.1). The birth order of the mothers was also significantly different between groups, as those in the inclusion group were more likely to have older siblings (median birth order 1±1 IQR v 3±2 IQR, p=0.01). The main maternity care person was significantly different between groups (Fisher's Exact: X^2=13.5, p=0.007) as more husbands were the main primary maternity care person in the inclusion (n=26; 40.6%) than the exclusion group (n=2; 11.8%). Those in the exclusion group also planned to practice the traditional postpartum confinement period longer than the inclusion group (median duration 56±19 v 45±14 days, p=0.04).

Intention and attitudes towards breastfeeding

During pregnancy, all participants stated that they intended to exclusively breastfeed their infants for at least 5 months with a median duration of planned breastfeeding of 24 months. The majority (n=50; 63%) of participants were also confident that they would be able to achieve their breastfeeding goals. Hence, no significant differences were shown in the confidence level in achieving breastfeeding goal between groups (X^2 =4.3, p=0.367) (Table 2).

Both exclusion and inclusion groups had a similar perception towards breastfeeding with IIFAS mean scores of 64.4±5SD and 67.0±6SD respectively (p=0.128), showing positive attitudes and perceptions

towards breastfeeding. Considering individual items in the IIFAS (Table 3), the inclusion group had a significantly higher score for items number six and eight of the questionnaire, indicating greater disagreement with these statements: No 6: *Formula feeding is better choice if a mother plans to work outside home;* and No 8: *Women should not breastfeed in public places* (p=0.003 and p=0.006 respectively). Scores for these two items were also positively correlated (r=0.48, p<0.001), indicating similarity in the perceptions towards breastfeeding in public or at work. The total IIFAS score was also significantly associated with the confidence levels in achieving breastfeeding goals (r=0.285, p=0.011). This indicates a positive attitude towards breastfeeding was correlated with higher confidence level in achieving the breastfeeding goal.

Breastfeeding attitudes and demographic factors

The IIFAS score was positively associated with the study population educational levels (r=0.34, p=0.002), household income (r=0.4, p<0.001), sociodemographic levels (r=0.44, p<0.001) and maternal age (r=0.26, p=0.018). There was a significant difference in IIFAS score between mothers with different levels of education ($F(3,83)=8.4$, p=0.02). The ANOVA post-hoc results revealed that mothers who attained the highest education had significantly higher IIFAS mean score than those who had received a certificate/diploma. Maternal age was associated with household income (r=0.24, p=0.03) and sociodemographic levels (r=0.35, p=0.002) indicating interrelation between factors. Maternal sociodemographic or characteristics were not correlated with breastfeeding intention (p>0.05).

DISCUSSION

The socio-demographic characteristics were similar between inclusion and exclusion groups of the study population, except that the inclusion group mothers were younger and more likely to have older siblings. Being younger and having older siblings may have resulted in these mothers having additional support from family members to establish breastfeeding. Consistently, studies among

Malaysian mothers living in urban areas reported that family members play an important role in supporting breastfeeding (Hamid, Chih, & Binns, 2017). On the other hand, primary maternity care from the husband was significantly higher in the inclusion group, suggesting that having a husband to support the wife may have helped women to establish and/or maintain exclusive breastfeeding. Similarly, other local studies also reported that having a supportive husband is one of the main factors that influences the success of breastfeeding (Nazatul & Ruby, 2009; Tan, 2011). Hence, social support from family members, especially the husband, may play an important role in rearing an infant (Sear, 2016), which has been reported in other populations (Meehan, Helfrecht, & Quinlan, 2014; Sear, Mace, & McGregor, 2000; Snopkowski & Sear, 2015).

The overall attitudes and perceptions toward breastfeeding recorded during late pregnancy were similar in the inclusion and exclusion groups, with the average population mean IIFAS score of 66.7, indicating a positive attitude towards breastfeeding. This is consistent with a previous study performed in Kuala Lumpur, Malaysia (n=690), which reported that mothers who intended to breastfeed had the highest IIFAS score (mean: 64.1±6.2) compared to groups of mothers who were undecided (60.9±5) or those who planned to feed formula (59.5±7.5) to their infants (Ishak et al., 2014). The study also found that mothers who had received tertiary education had significantly higher IIFAS score than those who had received a primary education, similar to the present study. Having a higher level of education and good perception toward breastfeeding is likely to have resulted in the mothers being highly motivated and/or confident to exclusively breastfeed. This is supported by the association results of the IIFAS score in the present study with the maternal confidence level in their breastfeeding goal.

Although the overall IIFAS mean score was not significantly different between inclusion and exclusion groups, two individual items were significantly different between groups and there was also a strong association between these questions. Both questions involved maternal perceptions

about feeling comfortable to breastfeed outside the home, either while working or in public. The results showed that mothers in the inclusion group were more likely to disagree with statements that do not favour breastfeed in public or at work. Moreover, mothers who disagree with these statements may also perceive that formula feeding is more convenient when mothers are away for work or when they are outside home. Previous studies have also reported that being a working mother and/or feeling uncomfortable to breastfeed in public were factors that contributed to non-exclusive breastfeeding (Adlina, Narimah, Hakimi, & Mazlin, 2006; Ishak et al., 2014; Tan, 2009a, 2009c, 2011). These factors could have been related to the perception of the exclusion group mothers who were unable to exclusively breastfeed their infants.

The overall socio-demographic characteristics of the study population were similar to the national data except that the ethnicity was not representative of the Malaysian multi-cultural population. There is a possibility that more Malay mothers participated in the study because the majority of the Malaysian population are Malays and the exclusive breastfeeding rates are also higher among Malays compared to other ethnicities in Malaysia, as reported in surveys and the latest National Health and Morbidity Survey 2016 (Institute for Public Health and Ministry of Health Malaysia, 2016; Ishak et al., 2014; Radzniwan, Azimah, Zuhra, & Khairani, 2009; Tan, 2009b, 2009c). The study population was also more educated compared to the age- and region-matched population, as 68.6% of the mothers in the study were educated to tertiary level. Although the majority of the mothers were highly educated, only 13.2% of them were in the higher income groups. This is probably because all mothers in the study were primiparous, and therefore the majority of them were still young (below 30 years) and might still be in the early stages of their careers. This is consistent with the national report that shows a gradual increase in monthly salaries by age (Ng et al., 2018).

In Malaysia, the majority of women, especially first-time mothers, will return to their hometown (outside Selangor and Kuala Lumpur) to stay with their family during the postpartum period mostly

to practice the traditional postpartum confinement (Ali & Howden-Chapman, 2007; Azidah, Shaiful, Rusli, & Jamil, 2006; Fadzil et al., 2016; Withers et al., 2018). In the current study, 99% of mothers in the study population indicated that they would be practicing the traditional postpartum confinement after birth for an average of 44 days, consistent with the Malay culture of traditional confinement, whereas Chinese and Indian mothers usually practice it for an average of 30 days (Azidah et al., 2006; Fadzil et al., 2016). Although common practice in Asia, including Malaysia, mothers may perceive it as either a source of comfort or stress (due to restrictions in diet and physical activity), which potentially could affect their psychological state during the lactation period. As found in the present study, mothers in the exclusion group intended to practice a longer traditional confinement period than those in the inclusion group. Hence, there is a research potential to explore the consequences of traditional confinement on breastfeeding outcomes.

In general, mothers enrolled in the present study were better educated and had a higher motivation to breastfeed than the general population in Malaysia. Furthermore, as the present study was part of the baseline data for the trial, mothers who participated in the study were likely to have a higher motivation to breastfeed since one of the trial's eligibility criteria was exclusive breastfeeding. These limits the generalisability of the study findings to the whole population of Malaysian at large. Nevertheless, this study shows that despite having high motivation, other factors could also influence maternal decision to practice exclusive breastfeeding. Other study limitations include a small sample size, reflecting the strict eligibility criteria and the sample size needed for the trial and homogenous participants as the majority were Malay ethnicity.

CONCLUSION

Maternal age, household income and educational background were associated with maternal breastfeeding attitude, hence it is important to identify target groups for future intervention. In terms of baseline data for the trial, the inclusion and exclusion groups were similar in socio-

demographic background and attitudes and intention towards breastfeeding except that the inclusion group mothers were significantly younger and more likely to have older siblings, and have a better perception towards breastfeeding in public or at work. This shows that, despite being motivated or having a strong intention to exclusively breastfeed, family or partner support could influence breastfeeding success during the early postpartum period. Therefore, future intervention such as educational breastfeeding programs should encourage family members and the partner to support mothers to exclusively breastfeed. It is also important to encourage strong breastfeeding intentions and a positive attitude towards breastfeeding during pregnancy rather than after birth, especially among first-time pregnant women. Societal attitudes are also important so that breastfeeding is normalized and mothers are not discouraged from breastfeeding in public (Brown, 2017; Fewtrell, Mohd Shukri, & Wells, 2020). At a policy level, it is critical to protect breastfeeding, provide optimal facilities for breastfeeding in public and work places, and educate young people including mothers-to-be about the dynamic process of breastfeeding (Brown, 2017; Fewtrell et al., 2020), which could help to increase mothers' confidence, and allow them to breastfeed in public.

CRediT author statement

Nurul Husna: Conceptualization, Methodology, Formal analysis, Investigation, Writing (Original draft), Project administration. Mary Fewtrell: Conceptualization, Methodology, Writing (Review & Editing), Supervision, Resources. Jonathan Wells: Conceptualization, Methodology, Writing (Review & Editing), Supervision.

Acknowledgments

We are thankful to all mothers and their infants who participated in study and to the Ministry of Health Malaysia for allowing the recruitment to be carried out at selected antenatal clinics in Selangor.

Funding

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Table 1. Descriptive characteristics of participants in comparison with national data

Descriptive characteristics		All participants		National data
		N	(%)	%
Baby's gender	Male	36	(43.4)	48.4 [a]
	Female	47	(56.6)	51.6 [a]
Mother's ethnicity	Malay/Bumiputera	76	(91.6)	58.6 [b]
	Chinese	3	(3.6)	28.4 [b]
	Indian	4	(4.8)	12.9 [b]
Age group	20-25	22	(26.5)	35.9 [b]
	26-30	53	(63.9)	36.1 [b]
	31-35	8	(9.6)	28 [b]
Marital status	Married	83	(100)	99 [b]
Educational levels	School	12	(14.5)	63 [c]
	Certificates/Diploma	14	(16.9)	
	Tertiary (university)	57	(68.6)	32 [c]
Household monthly income	<1500 (<£240)	1	(1.2)	1.4 [d]
	1500-3000	24	(28.9)	16.8 [d]
	3001-5000	23	(27.7)	28.1 [d]
	5001-8000	20	(24.1)	25.2 [d]
	8001-10000	6	(7.2)	9.7 [d]
	>10000 (>£1580)	5	(6)	18.8 [d]
Places of delivery	Public hospital	49	(59)	78[e]
	Private hospital	34	(41)	22[e]
Main maternity care person	Husband	28	(33.7)	-
	Parents	43	(51.8)	-
	In-laws	3	(3.6)	-
	Sibling/relatives	3	(3.6)	-
	Confinement lady	2	(2.4)	-
	Self (No one)	2	(2.4)	-
Levels of practicing traditional post-partum confinement	Very strong	10	(12)	-
	Strong	26	(31.3)	-
	Medium	40	(48.2)	-
	Low	3	(3.6)	-

[a] (Malaysia Planning Division, 2015); [b] (Department of Statistics, 2011); [c] (Amran, 2015); [d] (Hasan, 2015); [e] (Department of Health Selangor, 2015).

Table 2. Comparison results of study population between inclusion and exclusion groups

Variables		Exclusion n (%)	Inclusion n (%)	X^2-value	P-value
Baby's gender	Male	11 (59.7)	25 (39.1)	2.1	0.19
	Female	8 (42.1)	39 (60.9)		
Mother's ethnicity	Malay/Bumiputera	15 (78.9)	61 (95.3)	5.5	0.07
	Chinese	1 (5.3)	2 (3.1)		
	Indian	3 (15.8)	1 (1.6)		
Maternal age groups	20-25	1 (4.2)	21 (32.8)	6.7	0.03*
	26-30	19 (79.2)	38 (59.4)		
	31-35	4 (16.7)	5 (7.8)		
Educational levels	School	3 (12.5)	10 (15.6)	3.6	0.306
	Certificates/Diploma	6 (25)	8 (12.5)		
	Tertiary (university)	15 (62.5)	46 (71.8)		
Household monthly income	<1500 (<£240)	1 (4.2)	0 (0)	8.9	0.076
	1500-3000	7 (29.2)	19 (29.7)		
	3001-5000	9 (37.5)	16 (25)		
	5001-8000	2 (8.3)	19 (29.7)		
	8001-10000	0 (0)	6 (9.4)		
	>10000 (>£1580)	1 (4.2)	4 (6.3)		
Places of delivery	Public hospital	11 (57.9)	38 (59.4)	0.13	0.908
	Private hospital	8 (42.1)	26 (40.6)		
Main maternity care person	Husband	2 (11.8)	26 (40.6)	13.5	0.007*
	Parents	12 (70.6)	31 (48.4)		
	In-laws	0 (0)	3 (4.7)		
	Sibling/relatives	3 (17.6)	0 (0)		
	Confinement lady / self with helper	0 (0)	4 (6.2)		
Levels of practicing traditional post-partum confinement	Very strong	4 (20.8)	6 (9.4)	7.3	0.087
	Strong	5 (33.3)	21 (32.8)		
	Medium	5 (25)	35 (54.7)		
	Low	1 (0)	2 (3.1)		
Levels of confidence for achieving breastfeeding goals	Very high	2 (11.8)	13 (20.6)	4.3	0.367
	High	9 (52.9)	26 (41.3)		
	Medium	2 (11.8)	9 (14.3)		
	Low	4 (23.5)	7 (11.1)		
	Very low	0 (0)	8 (12.7)		

*Significant level at <0.05

Table 3: Mean scores for individual questions in IIFAS and the comparison results between groups (n=83)

IIFAS Questions	Exclusion group		Inclusion group		P-value	C.I	
	Mean	SD	Mean	SD			
1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk. ǂ	2.4	1.5	2.8	1.3	0.302	-1.1,	0.3
2. Formula-feeding is more convenient than breastfeeding. ǂ	3.5	1.1	3.8	1.1	0.366	-0.8,	0.3
3. Breastfeeding increases mother-infant bonding.	5.0	0.0	4.9	0.5	0.393	-0.1,	0.4
4. Breast milk is lacking in iron. ǂ	4.4	1.0	4.2	1.0	0.399	-0.3,	0.8
5. Formula-fed babies are more likely to be overfed than breast-fed babies.	2.8	1.0	3.0	1.1	0.538	-0.8,	0.4
6. Formula-feeding is the better choice if a mother plans to work outside home. ǂ	3.3	1.1	4.1	0.9	**0.003***	-1.3,	-0.3
7. Mothers who formula-feed miss one of the great joys of motherhood.	4.2	0.9	3.9	1.2	0.380	-0.3,	0.8
8. Women should not breast-feed in public places such as restaurants. ǂ	2.9	1.3	3.8	1.1	**0.006***	-1.4,	-0.3
9. Babies fed breast milk are healthier than babies who are fed formula.	4.6	0.9	4.6	0.8	0.773	-0.5,	0.4
10. Breast-fed babies are more likely to be overfed than formula-fed babies. ǂ	3.4	1.2	3.7	1.1	0.823	-0.6,	0.5
11. Fathers feel left out if a mother breast-feeds. ǂ	3.7	1.1	3.9	0.9	0.448	-0.7,	0.3
12. Breast milk is the ideal food for babies.	4.9	0.2	4.9	0.4	0.824	-0.2,	0.2
13. Breast milk is more easily digested than formula.	4.2	1.2	4.6	0.7	0.064	-0.3,	0.03
14. Formula milk is as healthy for an infant as breast milk. ǂ	4.2	0.9	4.2	0.8	0.927	-0.5,	0.4
15. Breastfeeding is more convenient than formula feeding.	4.0	1.0	3.9	1.0	0.779	-0.5,	0.6
16. Breast milk is less expensive than formula.	4.7	0.6	4.7	0.6	0.895	-0.3,	0.3
17. A mother who occasionally drinks alcohol should not breast-feed her baby. ǂ	2.3	1.3	2.4	1.1	0.933	-0.6,	0.6

* p-value < 0.05

ǂ Unfavourable to breastfeeding (reversed score applied)

Figure 1. Flowchart of the study