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# The emotional and practical experiences of formula-feeding mothers

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## Abstract

The majority of infant-feeding research is focused on identifying mother's reasons for the cessation of breastfeeding. The experience of mothers who choose to use formula is largely overlooked in quantitative designs. This study aimed to describe the emotional and practical experiences of mothers who formula feed in any quantity, and examine whether these experiences would vary among different cohorts of formula-feeding mothers according to prenatal feeding intention and postnatal feeding method. A total of 890 mothers of infants up to 26 weeks of age, who were currently formula feeding in any quantity, were recruited through relevant international social media sites via advertisements providing a link to an online survey. Predictors of emotional experiences included guilt, stigma, satisfaction, and defense as a result of their infant feeding choices. Practical predictor variables included support received from health professionals, respect displayed by their everyday environment, and main sources of infant feeding information. Descriptive findings from the overall sample highlighted a worryingly high percentage of mother's experienced negative emotions as a result of their decision to use formula. Multinomial logit models revealed that negative emotions such as guilt, dissatisfaction, and stigma were directly associated with feeding intention and method. The evidence suggests that the current approach to infant-feeding promotion and support may be paradoxically related to significant issues with emotional well-being. These findings support criticisms of how infant-feeding recommendations are framed by health care professionals and policy makers, and highlight a need to address formula feeding in a more balanced, woman-centered manner.

KEYWORDS

feeding experiences, formula feeding, guilt, infant feeding, maternal mental health, stigma

## 1 | INTRODUCTION

Breastfeeding has unanimously positive short- and long-term health benefits for both mother and infant (Kramer & Kakuma, 2012), and these effects are enhanced with the exclusivity and duration of breastfeeding (Ip et al., 2007). The World Health Organization (WHO) recommend exclusive breastfeeding up to 6 months of age, with continued breastfeeding up to 2 years of age or beyond (Semenic et al., 2012). To achieve this goal, a wide variety of pro-breastfeeding initiatives and campaigns have been developed to promote the commonly affirmed "breast is best" message. The dominant infant feeding discourse emphasizes not only the nutritional benefits of human milk but also stresses the advantages of breastfeeding from environmental, economic, feminist, and attachment perspectives (Lee, 2007; Knaak, 2010). This multidisciplinary belief in the superiority of breastfeeding has been widely disseminated among the lay population, and the way mothers feed their babies has become a matter of international, social, and public interest (Murphy, 1999; Lee, 2007). However, despite growing evidence for the positive impact of breastfeeding promotion on breastfeeding outcomes (Semenic et al., 2012), differences in breastfeeding initiation and continuation rates persist (Semenic et al., 2012). In many developed countries, achieving the WHO recommendation remains a challenge. For example, despite UK breastfeeding initiation rates increasing by 19% since 1990 (62% in 1990 to 81% in 2010), the latest Infant Feeding Survey revealed that only 1% of UK mothers are exclusively breastfeeding their infants up to the recommended 6 months juncture (McAndrew et al., 2012). Suboptimal exclusive breastfeeding statistics can also be observed in the United

  

States (16%), Canada (25%), and Australia (15%) leaving the vast majority of babies in developed countries receiving some formula milk in the first 6 months of life (Australian Institute of Health and Welfare, 2011; Health Canada, 2011; Centers for Disease Control and Prevention, 2015; Mcandrew et al., 2012). A small percentage (up to 2%) of mothers are physically unable to breast feed due to biological problems such as hypoplasia, breast abnormalities, prior surgery, or other medical contraindications (Brown, Raynor, & Lee, 2011). However, in the majority of cases, the introduction of formula is related to breastfeeding management rather than biological issues (Neifert & Bunik, 2013).

A growing body of literature highlights some of the more problematic aspects of the dominant breastfeeding discourse (Lagan et al., 2014; Knaak, 2010; Williams, Donaghue, & Kurz, 2012; Murphy, 1999; Knaak, 2006; Lee, 2007). While breastfeeding promotion is fundamentally a medical-based discourse with the objective of conveying the health benefits of breastfeeding, it subliminally situates breastfeeding as the appropriate and "moral" choice (Knaak, 2010). Given the widespread knowledge of the many merits of breastfeeding among mothers, the moral statuses of those who decide not to breastfeed, or who are unable to, are left in jeopardy (Murphy, 1999; Spencer, Greatrex-White, & Fraser, 2015). Assuming that every new parent desires the "best" for their infant, the "breast is best" slogan becomes a profoundly moralistic message, rather than a promotional tool to simplify the scientific evidence about the benefits of breastfeeding. This is amplified further by expert claims about the "riskiness" of choosing formula (Lee, 2007). In this manner, the pro-breastfeeding discourse has become intertwined with broader ideologies of the concept of optimal parenting (Lee, 2007; Knaak, 2010). This can lead to considerable pressure to conform to infant feeding guidelines in pregnancy and an emotional burden for those who do not manage to adhere to current recommendations in the postnatal period.

This discursive trend has also guided research protocols with a predominance of infant feeding research focused on identifying mother's reasons for the cessation of breastfeeding (Lakshman, Ogilvie, & Ong, 2009). While this is important in informing breastfeeding interventions, the lived experience of mothers who choose to use formula in a context where breastfeeding is strongly advocated has been largely overlooked (Knaak, 2006). The limited evidence that examines mothers who formula feed from this perspective does, however, raise important sociocultural concerns that extend beyond those about health and nutrition (Lee, 2007; Murphy, 1999; Bailey, Pain, & Aarvold, 2004; Mozingo et al., 2000; Knaak, 2010). A mixed methods systematic review by Lakshman et al. in 2009 effectively synthesizes the available evidence. Two key themes were identified among only 23 studies examining mother's experiences of formula feeding; maternal emotions; and perceptions of support. Negative feelings of guilt, stigma, and dissatisfaction were highlighted in all of the qualitative studies examining the emotional experiences of formula feeding women (Bailey et al., 2004; Cloherty, Alexander, & Holloway, 2004; Lee, 2007; Mozingo et al., 2000; Earle, 2000; Cairney, Alder, & Barbour, 2006; Spencer et al., 2015). In some of the studies, these feelings were internally motivated by an awareness of the superiority of breastfeeding (Lee, 2007; Cloherty et al., 2004; Bailey et al., 2004) and appeared to be more pronounced when formula feeding was not intended in pregnancy (Lakshman et al., 2009). Lee (2007) describes this intention–behavior incongruence as one of "moral collapse" (p. 1087), which refers to women who have strong intentions to breastfeed in pregnancy and experience negative emotions as a result of being unable to in the postnatal period. However, in other studies, an allegedly unreasonable pressure to breastfeed from external sources, namely, health professionals, emerged as the emotional catalyst (Lee, 2007; Mozingo et al., 2000; Earle, 2000; Lagan et al., 2014; Spencer et al., 2015). A perceived emphasis on the promotion of breastfeeding starting in pregnancy functioned as a vehicle of persuasion, rather than a vehicle of education, and alienated those who had chosen to formula feed (Lakshman et al., 2009). Mothers who initiate breastfeeding and then move to formula appear to be particularly susceptible to feelings of distress as a result of failing to conform to the "breast is best" message (Lagan et al., 2014). It has also been reported that these women experience a lack of support and information from health professionals concerning formula feeding (Lagan et al., 2014; Lakshman et al., 2009). Support and information is instead found to be heavily slanted towards breastfeeding, which again, reinforces the supremacy of the pro-breastfeeding discourse (Cairney et al., 2006; Furber & Thomson, 2006; Lagan et al., 2014). To foster appropriate infant feeding intentions, the Baby Friendly Hospital Initiative (BFHI) code on infant feeding discourages health professionals from actively disseminating formula feeding information antenatally

**Key messages**

- A high percentage of mothers experienced negative emotions including guilt (67%), stigma (68%), and the need to defend their decision (76%) to use formula.
- Mothers who had intentions to exclusively breastfeed in pregnancy (I-EBF) or those who exclusively formula fed at the time of study, yet initiated breastfeeding in accordance with current guidelines (EBF now EFF), were at a significantly higher risk of experiencing guilt and dissatisfaction as a result of their feeding method
- Those who intended to exclusively formula feed in pregnancy (I-EFF) and initiated exclusive formula feeding from birth (EFF) were at a higher risk of experiencing stigma as a result of their feeding method
- The study suggests that the current approach to infant feeding promotion and support in higher-income countries may be paradoxically related to significant issues with emotional well-being.

(UNICEF, 2015). However, this policy is often misinterpreted. Findings from two qualitative studies in the UK highlight that midwives in Baby-Friendly settings erroneously failed to provide support to formula-feeding mothers in the postnatal period because they believed they were prohibited by BFHI policy (Furber & Thomson, 2006; Lagan et al., 2014). Consistent with this, mothers report a perceived reluctance by health professionals to provide advice about formula feeding postnatally (Lee, 2007; Lagan et al., 2014).

Compared with the large literature on breastfeeding and despite the high percentage of infants receiving formula (McAndrew et al., 2012) and the potentially grave consequences for maternal and infant health and wellbeing arising from negative feeding experiences, there is very limited evidence regarding the opinions and experiences of formula-feeding mothers. Previous qualitative studies have only explored emotional experiences, while the quantitative studies primarily describe perceptions of information and support (see review by Lakshman et al., 2009). To our knowledge, no study has explored emotional and practical factors simultaneously nor quantified them in a large sample. Specifically, the aims of the current large-scale internet study were to (a) describe experiences of infant feeding support, information, respect, stigma, guilt, satisfaction, and defense in mothers who use formula in any quantity; (b) examine whether these experiences would vary among different cohorts of formula feeding mothers; and (c) examine whether these experiences would differ according to feeding intention in pregnancy. It was predicted that formula-feeding mothers who planned to follow current breastfeeding guidelines in pregnancy would perceive their infant feeding experiences more negatively than those who intended to formula feed in any quantity. Furthermore, mothers who exclusively formula feed at the time of study yet initiated breastfeeding in accordance with current guidelines were predicted to perceive their infant feeding experiences more negatively than other cohorts of formula-feeding mothers.

## 2 | METHOD

### 2.1 | Participants and recruitment

A total of 890 mothers of infants up to 26 weeks of age, who were currently formula feeding in any quantity, were recruited through relevant social media sites and mailing lists via advertisements providing a link to the Qualtrics survey software. The 26 weeks cut off point applied reflects the current WHO infant feeding recommendations (WHO, 2015). The advertisements stated that participants were invited to take part in a short study that would examine the opinions and experiences of formula-feeding mothers. Women who were exclusively breastfeeding, younger than 18 years of age, or non-English-speaking were not eligible to participate. Of the 890 participants, 289 (32%) were excluded from final analyses as they did not complete the full survey. The age of the final sample of 601 mothers ranged from 18 to 46 years ($M$ = 29.44; $SD$ = 5.65). Their babies' ages ranged from 1 to 26 weeks ($M$ = 17.96; $SD$ = 7.38). The sample were predominately married (64%), primiparous (62%) women from the United Kingdom (57%). Fifty-six percent of the sample intended to exclusively breastfeed, which is comparable with UK breastfeeding data (Mcandrew et al., 2012). Forty-six percent of the sample initiated exclusive breastfeeding but were exclusively formula feeding at the time of study. See Table 1 for full demographic details. The study gained ethical approval from the University of Liverpool Institute of Psychology, Health and Society Ethics Committee in January 2015. All aspects of the study were performed in accordance with the 1964 Declaration of Helsinki. Participants were provided with an information sheet, and informed consent was gained with a tick box. The online survey was accessible from 30/1/2015 to 3/3/2015.

### 2.2 | The survey

#### 2.2.1 | Demographics

Mothers were initially asked demographic questions relating to their age, marital status, and country of residence. To assess socioeconomic status, participants were asked to report their current occupation (or if currently on maternity leave, previous occupation). The simplified National Statistics Socio-economic Classification, which contains eight occupation classifications, was then applied (Office for National Statistics 2013). Demographic information (birth order and age in weeks) relating to the infant was also obtained.

#### 2.2.2 | Exposure variables

The exposure variables were developed from exploratory qualitative work that examined the infant feeding experiences of a sample of 19 postpartum women at two time points (4–8 and 12–16 weeks). The data revealed various themes relating to emotional and practical infant feeding experiences that were consistent with the qualitative literature highlighted in the introduction and were used to generate survey items. Basic face and content validation were conducted on the items. The survey was reviewed and revised by all members of the research team with the following characteristics in mind: (a) simplicity and viability; (b) reliability and precision in item wording; (c) adequacy of the experience that it was intended to measure; and (d) reflection of the underlying concept that was measured. See Table 2 for a breakdown of items in the order that they were displayed to participants.

The first part of the survey assessed the perceived level of infant feeding support that mothers received from health professionals, the perceived level of respect displayed by their everyday environment with regards to their feeding choices, and the perceived level of satisfaction experienced as a result of their feeding choices. All answers were provided via a 5-point Likert scale (higher responses indicated higher levels of support, respect, and satisfaction). Mothers were also asked about their main source of information about infant feeding. Potential responses included the internet, health professionals, family members, other mothers, the media, or previous experiences/own accord.

In the second part of the survey, mothers were asked to provide a binary (yes/ no) response to indicate the presence of feelings of guilt, stigma, and the need to defend as a result of their infant feeding choices. Display-logic was embedded in the survey software so that only participants with a positive response to these items were provided with a further item that examined the source of the feelings (potential options included the internet, health professionals, family

**TABLE 1** Maternal characteristics by overall sample, feeding type, and feeding intention

| Characteristic | Overall | Feeding type | | | *P*** | Feeding intention | | | *P*** |
|---|---|---|---|---|---|---|---|---|---|
| | | EBF now EFF | EFF | Combi | | I-EBF | I-EFF | I-combi | |
| Feeding type/intention (N/%*) | | 274 (45.6) | 152 (25.3) | 175 (29.1) | | 338 (56.2) | 103 (17.1) | 160 (26.6) | |
| Maternal age (mean years ± SD) | 29.44 (±5.65) | 29.23 (±5.24) | 28.38 (±6.16) | 30.70 (±5.62) | .001 | 29.05 (±5.58) | 29.60 (±6.22) | 29.58 (±5.52) | .592 |
| Child's age (mean weeks ± SD) | 17.96 (±7.38) | 18.47 (±7.38) | 17.64 (±7.70) | 17.42 (±7.07) | .282 | 17.63 (±7.55) | 16.74 (±7.60) | 18.48 (±7.20) | .090 |
| Country of residence (N/%*) | | | | | | | | | |
| UK | 344 (57.2) | 141 (23.4) | 103 (17.1) | 100 (16.6) | .18 | 178 (29.6) | 70 (11.6) | 96 (16.0) | .76 |
| Ireland | 7 (1.2) | 2 (0.3) | 4 (0.7) | 1 (0.2) | | 3 (0.5) | 3 (0.5) | 1 (0.2) | |
| USA | 122 (20.3) | 67 (11.1) | 21 (3.5) | 34 (5.7) | | 74 (12.3) | 17 (2.8) | 31 (5.2) | |
| Australia | 57 (9.5) | 29 (4.8) | 14 (2.3) | 14 (2.3) | | 34 (5.7) | 8 (1.3) | 15 (2.5) | |
| New Zealand | 22 (3.7) | 10 (1.6) | 3 (0.5) | 9 (1.5) | | 15 (2.5) | 1 (0.2) | 6 (1.0) | |
| Canada | 30 (5.0) | 13 (2.2) | 6 (1.0) | 11 (1.8) | | 20 (3.3) | 3 (0.5) | 7 (1.2) | |
| Other European | 12 (2.0) | 9 (1.5) | 1 (0.2) | 2 (0.3) | | 9 (1.5) | 0 (0) | 3 (0.5) | |
| Other world | 7 (1.1) | 3 (0.5) | 0 (0) | 4 (0.7) | | 5 (0.8) | 1 (0.2) | 1 (0.2) | |
| Birth order (N/%*) | | | | | | | | | |
| 1st | 370 (61.6) | 168 (28) | 82 (13.6) | 120 (20) | .091 | 238 (39.6) | 39 (6.5) | 93 (15.5) | <.001 |
| 2nd | 167(27.8) | 80 (13.3) | 51 (8.5) | 36 (60) | | 69 (11.5) | 44 (7.3) | 54 (9) | |
| 3rd | 38 (6.3) | 18 (3) | 8 (1.3) | 12 (2) | | 20 (3.3) | 8 (1.3) | 10 (1.7) | |
| 4th | 15 (2.5) | 5 (0.8) | 7 (1.2) | 3 (0.5) | | 6 (1) | 8 (1.3) | 1 (0.2) | |
| 5th and after | 11 (1.8) | 3 (0.3) | 4 (0.7) | 4 (0.7) | | 5 (0.8) | 4 (0.7) | 2 (0.3) | |
| Marital status (N/%*) | | | | | | | | | |
| Married | 381 (63.4) | 190 (31.8) | 74 (12.4) | 117 (19.6) | <.001 | 217 (36.3) | 60 (10.1) | 104 (17.4) | .272 |
| Living with a partner | 174 (29) | 70 (11.7) | 55 (9.2) | 49 (8.2) | | 91(15.2) | 33 (5.5) | 50 (8.4) | |
| Divorced | 1 (0.2) | 0 (0) | 1 (0.2) | 0 (0) | | 0 (0) | 1 (0.2) | 0 (0) | |
| Separated | 4 (0.7) | 1 (0.2) | 2 (0.3) | 1 (0.2) | | 2 (0.2) | 1 (0.2) | 1(0.3) | |
| Single | 37 (29) | 11 (1.8) | 19 (3.2) | 7 (1.2) | | 24 (0.8) | 8 (1.3) | 5 (4) | |
| Occupation (N/%*) | | | | | | | | | |
| Managers, directors, and senior officials | 42 (7) | 16 (2.7) | 6 (1) | 20 (3.3) | .058 | 32 (3.8) | 3 (0.5) | 16 (2.7) | .112 |
| Professional occupations | 216 (35.9) | 99 (16.5) | 46 (7.7) | 71 (11.8) | | 132 (22) | 36 (6) | 48(8) | |
| Associate professional and technical occupations | 16 (2.7) | 8 (1.3) | 2 (0.3) | 6 (1) | | 11 (1.8) | 2 (0.3) | 3 (0.5) | |
| Administrative and secretarial occupations | 67 (11.1) | 32 (5.3) | 18 (3) | 17 (2.8) | | 38 (6.3) | 22 (12) | 7 (3.7) | |

(*Continues*)

**TABLE 1** (Continued)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Skilled trades occupations | 18 (3.0) | 11 (1.8) | 3 (0.5) | 4 (0.7) | 8 (1.3) | 3 (0.5) | 7 (1.2) |
| Caring, leisure and other service occupations | 64 (10.6) | 30 (5) | 18 (3) | 16 (2.7) | 36 (6) | 11 (1.8) | 17 (2.8) |
| Sales and customer service occupations | 88 (14.6) | 39 (6.5) | 30 (5) | 19 (3.2) | 50 (8.3) | 22 (2.7) | 16 (3.7) |
| Process, plant and machine operatives | 2 (0.3) | 1 (0.2) | 0 (0) | 1 (0.2) | 1 (0.2) | 0 (0) | 1 (0.2) |
| Elementary occupations | 11 (1.8) | 3 (0.5) | 2 (0.3) | 6 (1) | 7 (1.2) | 3 (0.2) | 1 (0.5) |
| Not in paid occupation | 77 (12.8) | 35 (5.8) | 27 (4.5) | 15 (2.5) | 32 (5.3) | 24 (4) | 21 |

*Note.* EBF = exclusive breastfeeding; EFF = exclusive formula feeding; combi = combination feeding (all types); I-EBF = exclusive breastfeeding intention; I-EFF = exclusive formula feeding intentions; I-combi = combination feeding intention (all types).

*Percentages are given in reference to the whole sample.

**Group differences ascertained by one-way analysis of variance or $\chi^2$ tests.

*P*-value refers to the difference between all the options presented.

members, other mothers, the media, or previous experiences/own accord). Participants were able to choose more than one source if applicable. A positive response to the presence of guilt was also followed up using display-logic to ascertain whether the feelings were experienced internally, as a result of other's opinions, or both. Experiencing guilt internally is not dependent on other's knowing about one's behavior (in this case feeding intention/type) for it to arise. Conversely, experiencing guilt as a result of other's opinions is linked to public evaluation and is imposed on you by someone else.

#### 2.2.3 | Outcome variables

The outcome variables, current feeding type, and feeding intention in pregnancy were independently ascertained. Available answers were based on WHO-defined categories (WHO, 2015). Six different categories were available to the mothers (exclusively formula feeding from birth; breastfeeding to begin with but now a little formula; breastfeeding to begin with but now some formula; breastfeeding to begin with but now mostly formula; exclusively breastfeeding to begin with but now exclusively formula feeding; and combination feeding from birth).

Feeding intention was asked retrospectively at the end of the study to avoid response bias on answers relating to guilt, stigma, or the need to defend infant feeding choices. Five choices were available to the mothers (exclusively breastfeeding, mostly breastfeeding with some formula, approximately 50% breastfeeding and 50% formula feeding, mainly formula feeding with some breastfeeding, and exclusively formula feeding).

### 2.3 | Statistical analysis

All analysis was conducted using the IBM SPSS 22 software package. Due to unexpected singularities (empty cells in the cross-tabulations) occurring during statistical analysis, both outcome variables (current feeding type and feeding intention) were collapsed into three categories. Current feeding type: exclusively formula feeding (EFF) from birth; exclusively breastfeeding to start with but now exclusively formula feeding (EBF now EFF); and all other types of combination feeding (combi) and feeding intention: exclusively breastfeeding (I-EBF); any type of combination feeding (I-combi) and exclusively formula feeding (I-EFF). Descriptive statistics were generated for demographic and exposure variables of interest (Tables 2 and 3). One way ANOVA and $\chi^2$ tests were used to examine bivariate associations between study variables and both feeding type, and feeding intention (Table 3). Relative risk ratios (RRRs) for the association between exposure (emotional and practical variables) and outcome variables (feeding type and feeding intention) were then calculated using multinomial logit models. These include two sets of referent categories, one for the exposure category and one for the outcome category. Separate models were built for feeding type and feeding intention. The referent outcome category was set to reflect the hypotheses (i.e., feeding type: exclusive breastfeeding but now exclusively formula feeding; feeding intention; exclusive breastfeeding). Backward elimination was used to build the adjusted models, and demographic variables were kept as confounders in the model if they changed the beta coefficients of the exposure categories by more than 10%. Feeding intention and feeding type were

**TABLE 2** Survey items examining feeding intention, type, emotional, and practical experiences in order of appearance

| Displayed to | Question | Response options |
|---|---|---|
| All | 1. How are you currently feeding your baby? | Exclusively formula feeding from birth<br>Exclusively breastfeeding to begin with, but now exclusively formula feeding<br>Breastfeeding to begin with, but now a little formula<br>Breastfeeding to begin with, but now some formula<br>Breastfeeding to begin with, but now mostly formula<br>Combination feeding from birth |
| All | 2. How satisfied you are with your choice of feeding method? | Very Dissatisfied<br>Dissatisfied<br>Neutral<br>Satisfied<br>Very Satisfied |
| All | 3. Do you find that your everyday environment is respectful of your infant feeding choices? | Very Disrespectful<br>Disrespectful<br>Neutral<br>Respectful<br>Very Respectful |
| All | 4. How well supported by health care professionals do you feel when it comes to infant feeding? | Not supported at all<br>Minimally supported<br>Moderately supported<br>Very supported<br>Extremely supported |
| All | 5. What has been your main source of information for milk feeding? | Internet online parenting forums/social media sites, health related websites, others<br>Peers/other mothers in person<br>Family members—mother, father, sister, brother, grandparents, other<br>Health professionals—midwives, health visitors, GP, other<br>Media—television, radio, newspaper, other<br>Previous experiences/own accord |
| All | 6.1. Have you ever felt stigmatized for the way you choose to feed your baby? | Yes/No |
| If yes selected to question 6.1** | 6.2. If yes, where? | Internet online parenting forums/social media sites, health related websites, others<br>Peers/other mothers in person<br>Family members—mother, father, sister, brother, grandparents, other<br>Health professionals—midwives, health visitors, GP, other<br>Media—television, radio, newspaper, other |
| All | 7.1. Have you ever felt guilty about the way you choose to feed your baby? | Yes/No |
| If yes selected to question 7.1** | 7.2. If yes, was this feeling the result of others opinion or your own feelings? | Other's opinions/Own feelings/Both |
| If other's opinions or Both selected to question 7.2** | 7.3. If so, where? | Internet online parenting forums/social media sites, health related websites, others<br>Peers/other mothers in person<br>Family members—mother, father, sister, brother, grandparents, other<br>Health professionals–midwives, health visitors, GP, other<br>Media—television, radio, newspaper, other |
| All | 8.1. Have you ever felt the need to defend your choice of milk feeding method? | Yes/No |
| If yes selected to question 8.1** | 8.2. If yes, where? | Internet online parenting forums/social media sites, health related websites, others<br>Peers/other mothers in person<br>Family members—mother, father, sister, brother, grandparents, other<br>Health professionals—midwives, health visitors, GP, other<br>Media—television, radio, newspaper, other<br>To myself |
| All | 9. How were you planning to feed your baby when you were pregnant? | Exclusively formula feeding<br>Mostly formula feeding with a little breast feeding<br>Approximately 50% formula feeding and 50% breast feeding<br>Mostly breast feeding with a little formula<br>Exclusively breast feeding |

*Forced response was activated on all items.

**Display logic was used on follow up items.

**TABLE 3** Descriptive experiences of formula feeding mothers by overall sample, feeding type, and feeding intention

| | Overall *N* (%) | Feeding type *N* (%) | | | *p*-value** | Feeding intention *N* (%) | | | *p*-value** |
|---|---|---|---|---|---|---|---|---|---|
| Formula feeding experience | | EBF now EFF | EFF | Combi | | I-EBF | I-EFF | I-combi | |
| Guilty about choice of feeding method | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| No | 197 (33) | 57 (21) | 83 (55) | 57 (33) | <.001 | 71 (21) | 68 (66) | 58 (36) | <.001 |
| Yes | 404 (67) | 217 (79) | 69 (45) | 118 (67) | | 267 (79) | 35 (34) | 102 (64) | |
| Source of guilt | 404 | 217 | 69 | 118 | | 267 | 35 | 102 | |
| Internal | 121 (30) | 66 (30) | 17 (25) | 38 (32) | .264 | 91 (34) | 9 (26) | 21 (21) | .001 |
| External | 50 (12) | 24 (11) | 14 (21) | 12 (10) | | 23 (9) | 10 (29) | 17 (17) | |
| Both | 223 (55) | 127 (59) | 38 (55) | 68 (58) | | 153 (57) | 16 (46) | 64 (63) | |
| Source of guilt*† | 273 | 151 | 52 | 80 | | 176 | 26 | 81 | |
| Media | 130 (48) | 74 (49) | 22 (42) | 34 (43) | | 91 (52) | 12 (46) | 27 (33) | |
| Health professionals | 176 (64) | 96 (64) | 33 (63) | 47 (59) | | 114 (65) | 16 (62) | 46 (57) | |
| Family members | 94 (34) | 49 (32) | 9 (17) | 36 (45) | | 65 (40) | 4 (15) | 25 (31) | |
| Other mothers | 186 (68) | 106 (70) | 32 (62) | 48 (60) | | 120 (68) | 12 (46) | 54 (67) | |
| Internet | 177 (64) | 106 (70) | 35 (67) | 46 (58) | | 113(64) | 15 (58) | 49 (60) | |
| Stigmatized about choice of feeding method | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| No | 191 (32) | 81 (30) | 39 (26) | 71 (41) | .009 | 118 (35) | 28 (27) | 45 (28) | .172 |
| Yes | 410 (68) | 193 (70) | 113 (74) | 104 (59) | | 220 (65) | 75 (73) | 115 (72) | |
| Source of stigma*# | 410 | 193 | 113 | 104 | | 220 | 75 | 115 | |
| Media | 180 (44) | 91 (47) | 42 (37) | 47 (45) | | 105 (48) | 30 (40) | 45 (39) | |
| Health professionals | 244 (59) | 113 (59) | 74 (65) | 57 (55) | | 125 (57) | 52 (69) | 67 (58) | |
| Family members | 117 (29) | 56 (29) | 18 (16) | 43 (41) | | 74 (34) | 11 (15) | 32 (28) | |
| Other mothers | 255 (62) | 138 (72) | 59 (52) | 58 (56) | | 144 (65) | 33 (44) | 78 (68) | |
| Internet | 229 (56) | 115 (60) | 63 (56) | 51 (49) | | 122 (55) | 48 (64) | 59 (51) | |
| Need to defend choice of feeding method | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| No | 144 (24) | 51 (19) | 38 (25) | 55 (31) | .008 | 82 (24) | 31 (30) | 31 (19) | .136 |
| Yes | 457 (76) | 223 (81) | 114 (75) | 120 (69) | | 256 (76) | 72 (70) | 129 (81) | |
| Source of defense*# | 457 | 223 | 114 | 120 | | 256 | 72 | 129 | |
| Media | 62 (13) | 34 | 15 (13) | 13 (11) | | 37 (14) | 10 (14) | 15 (12) | |
| Health professionals | 265 (58) | 123 (55) | 76 (67) | 66 (55) | | 140 (55) | 49 (68) | 76 (59) | |
| Family members | 181 (40) | 92 (41) | 30 (26) | 59 (49) | | 113 (44) | 16 (22) | 52 (40) | |
| Other mothers | 314 (69) | 162 (73) | 72 (63) | 80 (67) | | 174 (68) | 42 (58) | 98 (76) | |
| Internet | 197 (43) | 107 (48) | 54 (47) | 36 (30) | | 108 (42) | 39 (54) | 50 (34) | |
| Internal defense | 222 (49) | 123 (30) | 34 (30) | 65 (54) | | 160 (63) | 14 (19) | 48 (37) | |
| Source of infant feeding information | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| Media | 3 (<1) | 2 (<1) | 0 | 1 (<1) | | 1 (<1) | 0 | 2 (1) | |
| Health professionals | 135 (23) | 60 (22) | 21 (14) | 54 (31) | <.001 | 91 (27) | 16 (16) | 28 (18) | <.001 |
| Family members | 77 (13) | 26 (10) | 35 (23) | 16 (9) | | 33 (10) | 21 (20) | 23 (14) | |
| Other mothers | 66 (11) | 27 (10) | 17 (11) | 22 (13) | | 36 (11) | 12 (12) | 18 (11) | |
| Internet | 187 (31) | 99 (36) | 36 (24) | 52 (30) | | 123 (36) | 18 (18) | 46 (29) | |
| Own accord/previous experiences | 133 (22) | 60 (22) | 43 (28) | 30 (17) | | 54 (16) | 36 (35) | 43 (27) | |
| Level of support from health professionals | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| Not supported at all | 44 (7) | 22 (7) | 14 (9) | 10 (6) | .548 | 26 (8) | 7 (7) | 11 (7) | .340 |
| Minimally supported | 125 (21) | 58 (21) | 31 (20) | 36 (21) | | 78 (23) | 17 (17) | 30 (19) | |
| Moderately supported | 216 (36) | 91 (33) | 61 (40) | 64 (37) | | 113 (33) | 48 (47) | 55 (34) | |
| Very supported | 135 (23) | 71 (26) | 26(17) | 38 (22) | | 79 (23) | 17 (17) | 39 (24) | |
| Extremely supported | 81 (13) | 34 (12) | 20 (13) | 27 (15) | | 42 (12) | 14 (14) | 25 (16) | |
| Satisfaction with feeding method | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| Very dissatisfied | 37 (6) | 15 (6) | 3 (2) | 19 (11) | <.001 | 33 (10) | 2 (2) | 2 (1) | <.001 |

(*Continues*)

**TABLE 3** (Continued)

| Formula feeding experience | Overall *N* (%) | Feeding type *N* (%) | | | *p*-value** | Feeding intention *N* (%) | | | *p*-value** |
|---|---|---|---|---|---|---|---|---|---|
| | | EBF now EFF | EFF | Combi | | I-EBF | I-EFF | I-combi | |
| Dissatisfied | 68 (11) | 39 (14) | 6 (4) | 23 (13) | | 58 (17) | 0 | 10 (6) | |
| Neutral | 89 (15) | 43 (16) | 9 (6) | 37 (21) | | 63 (19) | 6 (6) | 20 (13) | |
| Satisfied | 153 (25) | 88 (32) | 27 (18) | 38 (22) | | 95 (28) | 13 (13) | 45 (28) | |
| Very Satisfied | 254 (42) | 89 (33) | 107 (70) | 58 (33) | | 89 (26) | 82 (80) | 83 (52) | |
| Respect in everyday environment | 601 | 274 | 152 | 175 | | 338 | 103 | 160 | |
| Very disrespectful | 21 (3) | 6 (2) | 10 (7) | 5 (3) | 0.003 | 7 (2) | 8 (8) | 6 (4) | .004 |
| Disrespectful | 69 (11) | 35 (13) | 11 (7) | 23 (13) | | 48 (14) | 9 (9) | 12 (8) | |
| Neutral | 142 (24) | 72 (26) | 26 (17) | 44 (25) | | 92 (27) | 18 (18) | 32 (20) | |
| Respectful | 215 (36) | 107 (39) | 51 (34) | 57 (33) | | 115 (34) | 34 (33) | 66 (41) | |
| Very respectful | 154 (26) | 54 (20) | 54 (36) | 46 (26) | | 76 (23) | 34 (33) | 44 (28) | |

*Note*. EBF = exclusive breastfeeding; EFF = exclusive formula feeding; combi = combination feeding (all types); I-EBF = exclusive breastfeeding intention; I-EFF = exclusive formula feeding intentions; I-combi = combination feeding intention (all types).

*Participants could select more than one answer.

**Bivariate differences in experience ascertained by one-way analysis of variance and $\chi^2$ tests.

†Percentages are calculated from participants who answered "External" and "Both" in the reference question.

‡Percentages are calculated from participants who answered "yes" in the reference question.

*P*-value refers to the difference between all the options presented.

also included as potential confounders in the opposing models. When necessary exposure categories were collapsed (as described above) to meet the requirements of the statistical test and overcome complete separation issues within the sample (see Tables 4 and 5).

## 3 | RESULTS

### 3.1 | Overall sample

Of the 601 mothers, the majority experienced feelings of guilt (67%) about their choice of feeding method (Table 3). Interestingly, guilt was more likely to be internally motivated (30%) than stem from external sources (12%), although many experienced it from both channels (55%). Similar statistics were observed for other negative emotions with 68% of the sample experiencing feelings of stigma and a large majority (76%) of the sample experiencing the need to defend their choice of feeding method. External sources of guilt, stigma, and defense were primarily perceived to come from other mothers in similar quantities (68%, 62%, and 69%, respectively), although this was closely followed by health professionals (64%, 59%, and 58%, respectively). Despite these experiences, the majority (67%) of mothers responded that they were satisfied with their feeding method with a much lesser proportion (17%) reporting feelings of dissatisfaction. Similarly, the majority (62%) of mothers indicated that they felt respected, rather than disrespected (14%) in their everyday environment in terms of their infant feeding choices.

Thirty-six percent of the sample felt well supported by health professionals about their choice of feeding method. This left the majority of mothers experiencing low to moderate levels of infant feeding support (64%) from health professionals. This was echoed in the descriptive statistics regarding infant feeding information. The internet was favored above health professionals as a source of infant feeding information among the sample with one in three mothers (31%) choosing this option. Remarkably, mothers were almost equally likely to gain information from health professionals (23%) as they were to use their own accord (22%).

### 3.2 | Associations by feeding type

Descriptive statistics for all predictor variables split by feeding type can be found in Table 3. Forty-six percent of the mothers who were exclusively formula feeding at the time of study initiated breastfeeding in accordance with current guidelines (EBF now EFF). EBF now EFF mothers were more likely to be married ($p < .001$) than EFF mothers and mother who were combination feeding in any quantity (combi). EFF mothers were significantly younger than EBF now EFF mothers and combi mothers ($p = .001$). There were no differences in infant age, birth order, or occupational status between groups (Table 1).

Crude multinomial regression revealed that for those who experienced guilt as a result of their feeding method, the relative risk for being in the EFF group was four times lower in relation to EBF now EFF mothers and two times lower in combination feeding mothers when compared to EBF now EFF mothers (Table 4). After adjusting for maternal age, marital status, and feeding intention, the effect estimate for the EFF/EBF now EFF comparison was attenuated but the relative risk was still much lower (RRR: 0.45; 95% CI: 0.25, 0.79). Adjustment for covariates actually lowered the effect estimate further in the combi/EBF now EFF comparison (RRR: 0.38; 95% CI: 0.21, 0.64). Conversely, for those experiencing stigma as a result of their feeding method, the relative risk for being in the EFF group was much higher when compared to EBF now EFF mothers (RRR: 1.89; 95% CI: 1.04,

**TABLE 4** Crude and adjusted results for multinomial logit models* of the association between predictor variables and feeding type

| | Feeding type | | | |
|---|---|---|---|---|
| | EBF now EFF/EFF | | EBF now EFF/Combi | |
| Predictor | Crude RRR (95% CI) | Adjusted RRR (95% CI) | Crude RRR (95% CI) | Adjusted RRR (95% CI) |
| Guilty about choice of feeding method | | | | |
| Yes | **0.25 (0.15, 0.41)** | **0.45 (0.25, 0.79)** | **0.52 (0.31, 0.58)** | **0.38 (0.21, 0.64)** |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Stigmatized about choice of feeding method | | | | |
| Yes | **1.89 (1.04, 3.41)** | 1.48 (0.78, 2.83) | 0.78 (0.47, 1.29) | 0.85 (0.50, 1.44) |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Need to defend choice of feeding method | | | | |
| Yes | 0.75 (0.40, 1.40) | 0.88 (0.44, 1.77) | 0.67 (0.39, 1.16) | 0.76 (0.43, 1.36) |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Source of infant feeding information** | | | | |
| Internet and Media | 1.02 (0.51, 2.04) | 1.17 (0.55, 2.50) | 0.69 (0.41, 1.17) | 0.73 (0.42, 1.27) |
| Family members | **2.99 (1.38, 6.51)** | **2.74 (1.16, 6.44)** | 0.74 (0.35, 1.57) | 0.93 (0.43, 2.04) |
| Other mothers | 1.66 (0.71, 3.84) | 1.50 (0.60, 3.78) | 1.00 (0.49, 1.99) | 1.10 (0.54, 2.27) |
| Own accord/previous experiences | 1.76 (0.88, 3.49) | 1.21 (0.57, 2.60) | 0.61 (0.34, 1.10) | 0.66 (0.38, 1.22) |
| Health professionals* | 1.00 | 1.00 | 1.00 | 1.00 |
| Level of support from health professionals | | | | |
| Not supported at all | 1.65 (0.59, 4.68) | 1.57 (0.52, 4.78) | 0.87 (0.32, 2.31) | 0.79 (0.28, 2.21) |
| Minimally supported | 1.70 (0.75, 3.90) | 1.52 (0.62, 3.70) | 1.18 (0.56, 2.47) | 1.02 (0.47, 2.22) |
| Moderately supported | 1.45 (0.71, 2.98) | 1.16 (0.54, 2.51) | 1.21 (0.64, 2.30) | 1.13 (0.58, 2.20) |
| Very supported | 0.62 (0.29, 1.34) | 0.71 (0.31, 1.63) | 0.81 (0.42, 1.59) | 0.73 (0.37, 1.47) |
| Extremely supported* | 1.00 | 1.00 | 1.00 | 1.00 |
| Satisfaction with feeding method** | | | | |
| Dissatisfied | **0.34 (0.15, 0.77)** | 0.70 (0.30, 1.67) | **1.78 (1.04, 3.06)** | 1.51 (0.87, 2.64) |
| Neutral | **0.39 (0.18, 0.85)** | 0.48 (0.20, 1.13) | **1.70 (1.01, 2.91)** | 1.42 (0.82, 2.48) |
| Satisfied* | 1.00 | 1.00 | 1.00 | 1.00 |
| Respect in everyday environment** | | | | |
| Disrespectful | 0.87 (0.43, 1.72) | 0.89 (0.41, 1.94) | 1.23 (0.67, 2.27) | 1.40 (0.74, 2.67) |
| Neutral | 0.57 (0.32, 1.02) | 0.70 (0.37, 1.33) | 0.93 (0.57, 1.53) | 0.94 (0.56, 1.58) |
| Respectful* | 1.00 | 1.00 | 1.00 | 1.00 |

*Note*. EBF = exclusive breastfeeding; EFF = exclusive formula feeding; combi = combination feeding (all types); RRR = relative risk ratio.

*There are two referent categories in multinomial logit models, one for the exposure (indicated with *) and one for the outcome (exc BF now exc FF; to reflect the hypothesis).

**Categories were collapsed to meet requirements of multinomial logistic regression; **bold type** indicates significant associations; models were adjusted for maternal age, marital status, and feeding.

3.41). However, in adjusted analyses, this association was no longer significant. No associations between groups were observed with respect to defense.

In crude models, for those who experienced dissatisfaction or neutrality as a result of their feeding method, the relative risk of being in the EFF group was almost three times lower (RRR: 0.34; 95% CI: 0.15, 0.77; RRR: 0.39; 95% CI: 0.18, 0.85) when compared to EBF now EFF mothers. However, for those experiencing dissatisfaction and neutrality, a contrary association occurred when comparing combi/EBF now EFF groups (RRR: 1.78; 95% CI: 1.04, 3.06; RRR: 1.70; 95% CI: 1.01, 2.91). Neither of these associations were significant in adjusted models.

There were no differences in levels of respect or support between groups. However, one association was present when examining sources of information. Interestingly, in both crude (RRR: 2.99; 95% CI: 1.38, 6.51) and adjusted models (RRR: 2.74; 95% CI: 1.16, 6.44), for those that used family members over health professionals as their source of infant feeding information, the relative risk for being in the EFF group was three times higher when compared to EBF now EFF mothers.

**TABLE 5** Crude and adjusted results for multinomial logit models* of the association between predictor variables and feeding intention

| | Feeding intention | | | |
|---|---|---|---|---|
| | I-EBF/I-EFF | | I-EBF/I-combi | |
| Predictor | Crude RRR (95% CI) | Adjusted RRR (95% CI) | Crude RRR (95% CI) | Adjusted RRR (95% CI) |
| Guilty about choice of feeding method | | | | |
| Yes | **0.14 (0.08, 0.26)** | **0.13 (0.06, 0.28)** | **0.48 (0.29, 0.79)** | **0.47 (0.28, 0.78)** |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Stigmatized about choice of feeding method | | | | |
| Yes | **2.63 (1.31, 5.27)** | 1.81 (0.79, 4.19) | **1.75 (1.03, 2.96)** | 1.65 (0.96, 2.84) |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Need to defend choice of feeding method | | | | |
| Yes | 0.95 (0.47, 1.91) | 0.86 (0.36, 2.03) | 1.55 (0.86, 2.79) | 1.51 (0.82, 2.77) |
| No* | 1.00 | 1.00 | 1.00 | 1.00 |
| Source of infant feeding information** | | | | |
| Internet and Media | 0.84 (0.36, 1.92) | 0.47 (0.17, 1.35) | 1.21 (0.67, 2.19) | 1.15 (0.63, 2.10) |
| Family members | **2.50 (1.04, 6.02)** | 1.50 (0.50, 4.53) | 0.82 (0.43, 1.57) | 1.63 (0.76, 3.49) |
| Other mothers | 1.75 (0.68, 4.53) | 1.60 (0.51, 4.98) | 1.50 (0.71, 3.18) | 1.40 (0.66, 2.99) |
| Own accord/previous experiences | **3.78 (1.74, 8.21)** | 1.33 (0.48, 3.66) | **2.51 (1.35, 4.68)** | 2.22 (1.12, 4.38) |
| Health Professionals* | 1.00 | 1.00 | 1.00 | 1.00 |
| Level of support from health professionals | | | | |
| Not supported at all | 0.76 (0.21, 2.72) | 0.37 (0.08, 1.74) | 0.76 (0.28, 2.05) | 0.74 (0.27, 2.02) |
| Minimally supported | 1.20 (0.45, 3.25) | 0.69 (0.20, 2.32) | 0.79 (0.37, 1.67) | 0.79 (0.37, 1.71) |
| Moderately supported | 1.61 (0.71, 3.63) | 1.80 (0.67, 4.78) | 0.82 (0.43, 1.58) | 0.85 (0.44, 1.65) |
| Very supported | 0.60 (0.25, 1.46) | 0.60 (0.20, 1.77) | 0.72 (0.37, 1.42) | 0.76 (0.38, 1.51) |
| Extremely supported* | 1.00 | 1.00 | 1.00 | 1.00 |
| Satisfaction with feeding method** | | | | |
| Dissatisfied | **0.07 (0.02, 0.30)** | **0.13 (0.06, 0.28)** | **0.24 (0.12, 0.49)** | **0.26 (0.13, 0.52)** |
| Neutral | **0.27 (0.10, 0.68)** | 0.54 (0.18, 1.60) | **0.55 (0.31, 0.98)** | 0.58 (0.21, 1.04) |
| Satisfied* | 1.00 | 1.00 | 1.00 | 1.00 |
| Respect in everyday environment** | | | | |
| Disrespectful | 1.65 (0.74, 3.70) | **3.25 (1.12, 9.38)** | 0.71 (0.37, 1.38) | 0.75 (0.39, 1.47) |
| Neutral | 0.67 (0.34, 1.32) | 0.88 (0.38, 2.04) | 0.67 (0.40, 1.12) | 0.70 (0.41, 1.20) |
| Respectful* | 1.00 | 1.00 | 1.00 | 1.00 |

*Note*. I-EBF = exclusive breastfeeding intention; I-EFF = exclusive formula feeding intention; I-combi = combination feeding intention (all types); RRR = relative risk ratio.

*There are two referent categories in multinomial logit models, one for the exposure (indicated with *) and one for the outcome (exc BF; to reflect the hypothesis).

**Categories were collapsed to meet requirements of multinomial logistic regression; **Bold type** indicates significant associations; models were adjusted for maternal age, birth order, and feeding type

## 3.3 | Associations by feeding intention

Descriptive statistics for all predictor variables split by feeding intention can be found in Table 3. More than half of the mothers (56% of 601) intended to exclusively breastfeed their baby in pregnancy (I-EBF). These mothers were more likely to be primiparous ($p < .001$) than those who planned to exclusively formula feed (I-EFF) or combination feed in any quantity (I-combi; Table 3). Crude multinomial regression revealed that for those experiencing guilt, the relative risk for being in the I-EFF group was seven times lower when compared to I-EBF mothers (RRR: 0.14; 95% CI: 0.08, 0.26) and two times lower for I-combi mothers when compared to I-EBF mothers (RRR: 0.48; 95% CI: 0.29, 0.79). Adjustment for maternal age, birth order, and feeding type lowered the relative risk further (RRR: 0.13, 95% CI: 0.06, 0.28; RRR: 0.47, 95% CI: 0.28, 0.78, respectively). Conversely, for those experiencing stigma, the relative risk for being in the I-EFF group was 2.6 times higher than those in the I-EBF group (RRR: 2.63; 95% CI: 1.31, 5.27) and 1.7 times higher in the I-combi group (RRR: 1.75; 95% CI: 1.03, 2.96) than those in the I-EBF group. Neither association remained significant in adjusted models. Again,

no associations between groups were observed with respect to defense.

Although this finding was as hypothesized, the relative risk of being in the I-EFF group rather than the I-EBF group was 14 times lower for those experiencing dissatisfaction (RRR: 0.07; 95% CI: 0.02, 0.30). The risk was also four times lower when comparing I-combi/I-EBF mothers (RRR: 0.24; 95% CI: 0.12, 0.49). In adjusted models, the associations were attenuated but remained strong (Table 5). However, in adjusted models, for those experiencing disrespect from their everyday environment, the relative risk of being in the I-EFF group was three times higher (RRR: 3.25; 95% CI: 1.12; 9.38) than I-EBF mothers. No differences in levels of support were observed between groups. However, when examining sources of information, for those that used family members and their own accord over health professionals (RRR: 2.50; 95% CI: 1.04, 6.02; RRR: 3.78; 95% CI: 1.74, 8.21 respectively), the relative risk of being in the I-EFF group was higher than the risk of being in the I-EBF group. The same pattern was observed in the I-combi/I-EBF comparison (RRR: 2.51; 95% CI: 1.35, 4.68). Again, no associations for infant feeding information remained significant in adjusted models.

## 4 | DISCUSSION

Given the limited evidence base in quantitative designs, the first aim of this study was to examine the emotional and practical experiences of mothers who use formula in any quantity. Descriptive findings from the overall sample indicate that despite feeling satisfied and well respected; a high percentage of mothers experienced negative emotions including guilt (67%), stigma (68%), and the need to defend their decision (76%) to use formula. This is the first study to provide numerical evidence to support qualitative research (Bailey et al., 2004; Cloherty et al., 2004; Lee, 2007; Mozingo et al., 2000; Earle, 2000; Cairney et al., 2006) and quantify the highly pervasive nature of negative emotions occurring among formula-feeding women. Eighty-eight percent of women are using some quantity of formula in the first 6 months of life (Mcandrew et al., 2012). These findings indicate a widespread public health issue that requires urgent attention from infant feeding policy makers in order to protect the emotional well-being of formula feeding mothers at an already precarious time. Mood disturbances are more common postpartum as compared to prepartum or the rate that characterizes women in the general population (O'Hara et al., 2012; Viguera et al., 2011; Wenzel et al., 2005). Moreover, they are a precursor to more serious postnatal mood disorders and potentially deleterious maternal or infant health outcomes (Raes et al., 2014; Glasheen, Richardson, & Fabio, 2010; Grace, Evindar, & Stewart, 2003). Undesirable emotions relating to infant feeding may exacerbate these relationships.

Feelings of guilt were more likely to be internally motivated than stem from external sources. This is an interesting finding supporting previous literature that proposes an instinctive knowledge regarding the superiority of breastfeeding (Lee, 2007; Cloherty et al., 2004; Bailey et al., 2004) and indicates that self-reproach is the likely consequence of a discordant infant feeding outcome. With regards to external emotional catalysts, the data followed a similar pattern for guilt, stigma, and the need to defend feeding method. The primary external source of all the emotions under study was other mothers. Although this is a novel finding in the infant feeding literature, the media-fuelled "mummy-wars" between breastfeeding and formula feeding mothers may be a contributing factor (Christopher & Krell, 2014). Informal relationships between mothers both face to face and via social media platforms are an important source of social and emotional support (Lee, 2007; Zimmerman et al., 2008), and the sociocultural significance of infant feeding decisions may be placing these networks in jeopardy (Christopher & Krell, 2014).

These negative emotions were secondarily driven by health professionals. These feelings may occur as a result of not conforming to health professionals' recommendations or stem from a perception that health professionals judge formula to be an inferior option (Lagan et al., 2014; Spencer et al., 2015). Such conclusions are further reinforced by data revealing that the majority of mothers in this study felt unsupported by health professionals and were more likely to rely on the internet for infant feeding information than seek advice from them. Although it is acknowledged that the vast majority of health professionals strive to promote and support the health and well-being of mothers and their infants, a perceived lack of infant feeding support and information from commissioned health services may result in errors in the preparation, handling, and storage of formula. These mistakes were noted in a number of studies reviewed by Lakshman (2009), and such consistencies in the literature raise considerable implications for infant health. Inadequate conditions when handling formula milk may lead to inadequate or excessive intake of calories and nutrients, dehydration, and diarrhea. Moreover, there is a high risk of infection if bottles are washed or diluted with water at incorrect temperatures or stored inappropriately (Labiner-Wolfe, Fein, & Shealy, 2008; Lakshman et al., 2009).

The secondary aims of this work were to assess whether these experiences varied according to prenatal feeding intention and postnatal feeding type. Specifically, it was predicted that formula-feeding mothers who had intentions to exclusively breastfeed in pregnancy (I-EBF) or those who exclusively formula fed at the time of study, yet initiated breastfeeding in accordance with current guidelines (EBF now EFF), would have more negative experiences than the other groups under study. Regression analyses revealed that both I-EBF and EBF now EFF type mothers were at a significantly higher risk of experiencing guilt about their choice of feeding method than other cohorts. These associations remained strong after adjustment for a range of confounders and could be most clearly observed when mothers expressed intentions to exclusively breastfeed in pregnancy. Guilt arises from the internal consciousness of an immoral action; this finding further exposes the moralistic nature of the pro-breastfeeding discourse (Murphy, 1999; Lee, 2007; Knaak, 2010) and highlights the emotional costs for those who try, yet are unable to achieve the current WHO guidance of exclusive breastfeeding for 6 months. This guidance is intended to inform international government policies, but is instead widely disseminated by health professionals as an individual feeding goal for women (Hoddinott et al., 2013). Others have suggested that this is an unachievable "one size fits all" approach that disregards individual women's circumstances (Schmied, Sheehan, &

Barclay, 2001; Lagan et al., 2014) and sets women up for failure (Hoddinott et al., 2013).

Similarly, the findings revealed that both I-EBF and EBF now EFF-type mothers were at a significantly higher risk of experiencing dissatisfaction about their choice of feeding method than other cohorts, although this result was not significant in adjusted models for feeding type. Cultural representations of formula as nutritionally inferior, unsafe, or risky have been highlighted as a contributors to feeding dissatisfaction (Lee, 2007; Knaak, 2010; Knaak, 2006; Murphy, 1999); these findings lend agreement to this body of qualitative work. In addition, dissatisfaction with infant feeding has been associated with overall discontent about the initial postnatal period (Symon, Whitford, & Dalzell, 2013). Several other studies have noted the emotional burden for those that intend to, and initially start breastfeeding in accordance with current policies, yet change to formula feeding early (Lagan et al., 2014; Schmied et al., 2001; Lee, 2007). These findings provide quantitative evidence to support criticisms of how infant feeding recommendations are framed by policy makers and appeals for a less prescriptive approach to the way current guidelines are presented to women (Lee, 2007; Knaak, 2006; Lagan et al., 2014). Associations for both guilt and dissatisfaction were stronger in feeding intention analyses than feeding type analyses. This suggests that the negative emotions experienced when prenatal exclusive breastfeeding expectations are unmet may be more profound than those experienced when exclusive breastfeeding is ceased in the postnatal period. Although this is a novel finding, recent work has indicated that the psychological disappointment generated by unmet expectations leads to lower well-being and a higher risk of depressive symptoms in the postpartum (Gregory et al., 2015). Others have also noted this mismatch between idealism and realism, suggesting that policy makers are encouraging idealistic expectations in pregnancy but failing to support women to achieve these goals after birth (Hoddinott et al., 2013; Lee, 2007; Lagan et al., 2014).

Contrary to the hypothesis, I-EFF and EFF mothers were at a higher risk of experiencing stigma as a result of their feeding method than other cohorts, although these associations were attenuated in adjusted models. This suggests that mothers who intentionally use formula may be prone to a different, albeit undesirable, emotional experience. Furthermore, these mothers were also more likely to rely on family members than health professionals for infant feeding information when compared to those who attempted to follow current breastfeeding recommendations. Stigma is defined as a negative and widely held social belief about an undesirable behavior (Goffman, 1963), and is highly associated with perceptions of social isolation (Link & Phelan, 2006). It is argued that the highly prevalent "breast is best" mantra serves to alienate those who intend to exclusively formula feed and creates reluctance among women to seek professional advice about their "suboptimal" feeding method. This finding resonates with other work highlighting feelings of isolation (Murphy, 1999; Lee, 2007) and information gaps in the current infant feeding message for those who decide to formula feed (Lagan et al., 2014; Knaak, 2006; Knaak, 2010). The Royal College of Midwives (2004) advocates that women who choose to formula feed should have their decision respected. Similarly, the National Institute for Clinical Excellence (2008) guidelines emphasizes that health professionals need to provide balanced and individualized information in discussions that encompass all infant feeding options. Counterintuitively, BFHI policy continues to prohibit health professionals from providing antenatal formula feeding advice in pregnancy, even to those who express intentions to exclusively formula feed in pregnancy (UNICEF, 2010). There may be a critical window of time for such conversations to take place to enhance perceptions of care and prevent negative maternal emotions from occurring prior to the postnatal period. Furthermore, this will enable health professionals to promote the safe and appropriate use of formula prior to commencement of use.

While the BFHI message is critically important in developing countries (Bartington et al., 2006) or high-risk situations (prematurity, very low birth weight) (UNICEF, 2013) where the relevance for child survival is undisputed, it may be internalized differently among affluent or low-risk populations. The evidence presented here suggests that the current approach to infant feeding promotion and support in higher-income countries may be paradoxically related to significant issues with emotional well-being and may need to be situationally modified. This is not an isolated finding (Lagan et al., 2014; Lee, 2007; Knaak, 2006; Spencer et al., 2015; Thomson & Dykes, 2011; Schmied et al., 2011) and points to tensions with breastfeeding initiatives such as BFHI in their current form. Exclusive breastfeeding rates are very low in some higher-income countries such as the UK and continue to stagnate (Mcandrew et al., 2012; Bolling et al., 2005). At present, there is limited evidence examining the efficacy of public health interventions designed to increase rates of breastfeeding initiation and duration in higher-income settings. Only two studies in the UK have been conducted in BFHI settings and both indicate that the benefits of the current strategy are transient and not sustained (Bartington et al., 2006; Broadfoot et al., 2005). There is urgent need for further evaluation of current initiatives such as BFHI in higher-income settings to identify barriers to breastfeeding success and eliminate risks to maternal and infant well-being.

These conclusions are reinforced by the present study's large sample size that allowed assessment and adjustment of a range of established confounders while maintaining statistical power. The study design allowed us to distinguish between the emotional and practical experiences of different groups of formula feeders and as such provides a rationale for support to be tailored to specific cohorts of women. These experiences were, however, explored in a self-selected online sample of mothers. It is possible that responses were biased towards those with extreme experiences as those who are neutral about the topic may have chosen not to participate. For instance, mothers who wanted to breastfeed yet were unable to for biological reasons are likely to experience negative emotions as a result of diminished choice. Feeding intention was assessed retrospectively, which may have also increased the chance of response bias. However, this is offset by the high levels of anonymity experienced when participating in online research. The study sample was predominantly first-time, married mothers from the UK, which limits the generalizability of findings to other settings. Data from exclusively breastfeeding women were also not obtained, and so comparisons cannot be made with those who successfully adhere to current recommendations; this may be an interesting avenue for future research. The survey items used were not subject to comprehensive validity testing, again, this should be explored if the questions are to be used again with a different sample.

To conclude, descriptive findings from the overall sample indicate widespread negative emotions among those who choose to formula feed in any quantity. Although the hypotheses were only partially supported, this is the first study to identify that failure to initiate, or premature discontinuation of breastfeeding is directly associated with negative emotions, namely, guilt and stigma. Women who intended to exclusively breastfeed, or initiated exclusive breastfeeding, were more susceptible to guilt, whereas those who intended to or initiated exclusively formula feeding were at greater risk of experiencing stigma. As such, it exposes the specific emotional repercussions of formula feeding and provides further evidence to suggest that there is insufficient support and advice in place for those who use formula to feed their infants. The findings quantitatively summarize a rich body of qualitative work that highlights a need to address formula feeding in a more balanced, woman-centered manner. Such consistency in the literature provides a solid basis to inform large-scale trials and evaluations examining the efficacy of current infant feeding initiatives. Ultimately, it is imperative to determine whether the benefits of the current infant feeding message outweigh the apparent risks to maternal and infant well-being.

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## CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

## CONTRIBUTIONS

Conception or design of the work, data collection, and data analysis and interpretation were performed by VF and SK. JAH critically reviewed the protocol; VF drafted the initial manuscript. Critical revision of the article and final approval of the version to be published were carried out by VF, SK, JAH, KMB and JCGH.

## REFERENCES

Australian Institute of Health and Welfare, 2011. Australian national infant feeding survey. *2010 Australian National Infant Feeding Survey*. Available at: http://www.aihw.gov.au/publication-detail/?id=10737420927 [Accessed September 1, 2015].

Bailey, C., Pain, R. H., & Aarvold, J. E. (2004). A "give it a go" breast-feeding culture and early cessation among low-income mothers. *Midwifery*, *20*(3), 240–250.

Bartington, S., Griffiths, L. J., Tate, A. R., & Dezateux, C. (2006). Are breastfeeding rates higher among mothers delivering in Baby Friendly accredited maternity units in the UK? *International Journal of Epidemiology*, *35*(5), 1178–1186.

Bolling, K., Grant, C., Hamlyn, B., & Thornton, A. 2005. *Infant feeding survey 2005*. *The Health and Social Care Information Centre*.

Broadfoot, M., Britten, J., Tappin, D. M., & MacKenzie, J. M. (2005). The Baby Friendly Hospital Initiative and breast feeding rates in Scotland. *Archives of disease in childhood*. *Fetal and neonatal edition*, *90*(2), F114–F116.

Brown, A., Raynor, P., & Lee, M. (2011). Healthcare professionals' and mothers' perceptions of factors that influence decisions to breastfeed or formula feed infants: A comparative study. *Journal of Advanced Nursing*, *67*(9), 1993–2003.

Cairney, P., Alder, E., & Barbour, R. (2006). Support for infant feeding: Mothers' perceptions. *British Journal of Midwifery*, *14*(12), 694–700.

Centers for Disease Control and Prevention, 2015. Centers for disease control and prevention national immunisation survey. *Breastfeeding among U.S. Children Born 2002–2012*. Available at: http://www.cdc.gov/breastfeeding/data/NIS_data/ [Accessed September 1, 2015].

Christopher, G. C., & Krell, J. K. (2014). Changing the breastfeeding conversation and our culture. *Breastfeeding Medicine*, *9*(2), 53–55.

Cloherty, M., Alexander, J., & Holloway, I. (2004). Supplementing breast-fed babies in the UK to protect their mothers from tiredness or distress. *Midwifery*, *20*(2), 194–204.

Earle, S. (2000). Why some women do not breast feed: bottle feeding and fathers' role. *Midwifery*, *16*(4), 323–330.

Furber, C. M., & Thomson, A. M. (2006). "Breaking the rules" in baby-feeding practice in the UK: Deviance and good practice? *Midwifery*, *22*(4), 365–376.

Glasheen, C., Richardson, G. a., & Fabio, A. (2010). A systematic review of the effects of postnatal maternal anxiety on children. *Archives of Women's Mental Health*, *13*(1), 61–74.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. London: Penguin.

Grace, S. L., Evindar, A., & Stewart, D. E. (2003). The effect of postpartum depression on child cognitive development and behavior: A review and critical analysis of the literature. *Archives of Women's Mental Health*, *6*(4), 263–274.

Gregory, E. F., Butz, A. M., Ghazarian, S. R., Gross, S. M., & Johnson, S. B. (2015). Are unmet breastfeeding expectations associated with maternal depressive symptoms? *Academic Pediatrics*, *15*(3), 319–325.

Health Canada, 2011. Duration of exclusive breastfeeding in Canada: Key statistics and graphics. *Duration of Exclusive Breastfeeding in Canada: Key Statistics and Graphics (2009-2010)*. Available at: http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/prenatal/exclusive-exclusif-eng.php [Accessed September 1, 2015].

Hoddinott, P., Craig, L. C., Britten, J., & McInnes, R. (2013). A serial qualitative interview study of infant feeding experiences: Idealism meets realism. *BMJ Open*, *16*(3), 32–34.

Ip, S., Chung, M., Raman, G., Chew, P., Magula, N., DeVine, D., … Lau, J. (2007). Breastfeeding and maternal and infant health outcomes in developed countries. *Evidence Report/Technology Assessment*, *153*, 1–186.

Knaak, S. J. (2006). The problem with breastfeeding discourse. *Canadian Journal of Public Health*, *97*(5), 412–414.

Knaak, S. J. (2010). Contextualising risk, constructing choice: Breastfeeding and good mothering in risk society. *Health*, *Risk & Society*, *12*(4), 345–355.

Kramer, M. & Kakuma, R., 2012. Optimal duration of exclusive breastfeeding (review). *Cochrane Database of Systematic Reviews*, (8). Available at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD003517/pdf/standard [Accessed September 1, 2014].

Labiner-Wolfe, J., Fein, S. B., & Shealy, K. R. (2008). Infant formula-handling education and safety. *Pediatrics*, *122*, S85–S90.Suppl (October 2008)

Lagan, B. M., Symon, A., Dalzell, J., & Whitford, H. (2014). The midwives aren"t allowed to tell you': Perceived infant feeding policy restrictions in a formula feeding culture - the Feeding Your Baby Study. *Midwifery*, *30*(3), e49–e55 .Available at: http://www.ncbi.nlm.nih.gov/pubmed/24238979 [Accessed February 2, 2015]

Lakshman, R., Ogilvie, D., & Ong, K. K. (2009). Mothers' experiences of bottle-feeding: A systematic review of qualitative and quantitative studies. *Archives of Disease in Childhood*, *94*(8), 596–601.

Lee, E. (2007). Health, morality, and infant feeding: British mothers' experiences of formula milk use in the early weeks. *Sociology of Health and Illness*, *29*(7), 1075 .1090

Link, B. G., & Phelan, J. C. (2006). Stigma and its public health implications. *Lancet*, *367*(9509), 528–529 .Available at: http://www.sciencedirect.com/science/article/pii/S0140673606681841

Mcandrew, A. F., Thompson, J., Fellows, L., Large, A., Speed, M., & Renfrew, M. J. (2012). Infant feeding survey 2010. *The Health and Social Care Information Centre, pp.*, 1–331.

Mozingo, J., Davis, M., Droppleman, P., & Meredith, A. (2000). "It wasn't working": Women's experiences with short-term breastfeeding. *The American Journal of Maternal/Child Nursinf*, *25*(3), 120–126.

Murphy, E. (1999). "Breast is best": Infant feeding decisions and maternal deviance. *Sociology of Health & Illness*, *21*(2), 187–208. Available at: http://hdl.handle.net/2381/12836

National Institute for Health and Care Excellence (2008). Postnatal Care. Retrieved from https://www.nice.org.uk/guidance/qs37/chapter/quality-statement-6-formula-feeding [Accessed September 28, 2016].

Neifert, M., & Bunik, M. (2013). Overcoming clinical barriers to exclusive breastfeeding. *Pediatric Clinics of North America*, *60*, 115–145.

O'Hara, M. W., Stuart, S., Watson, D., Dietz, P. M., Farr, S. L., & D'Angelo, D. (2012). Brief scales to detect postpartum depression and anxiety symptoms. *Journal of Women's Health (2002)*, *21*(12), 1237–1243 http://doi.org/10.1089/jwh.2012.3612

Office for National Statistics (2013) E.L. and S.A.M.S.E.M.-A. and R. labour. market@ons. gsi. gov. u., SOC2010 volume 3: the National Statistics Socio-economic classification (NS-SEC rebased on the SOC2010).

Raes, F., Smets, J., Wessel, I., Van Den Eede, F., Nelis, S., Franck, E., & Hanssens, M. (2014). Turning the pink cloud grey: Dampening of positive affect predicts postpartum depressive symptoms. *Journal of Psychosomatic Research*, *77*(1), 64–69 .Available at: http://dx.doi.org/10.1016/j.jpsychores.2014.04.003

Royal College of Midwives (2004). *Infant Feeding Position Statement*. Retrieved from https://www.rcm.org.uk/sites/default/files/POSITION STATEMENT Infant-Feeding.pdf

Schmied, V., Sheehan, A., & Barclay, L. (2001). Contemporary breast-feeding policy and practice: Implications for midwives. *Midwifery*, *17*(1), 44–54.

Schmied, V., Beake, S., Sheehan, A., McCourt, V., Dykes, F. (2011). Women's perceptions and experiences of breastfeeding support: A metasynthesis. *Birth*, *38*(1), 49–61.

Semenic, S., Childerhose, J. E., Lauziere, J., & Groleau, D. (2012). Barriers, facilitators, and recommendations related to implementing the Baby-Friendly Initiative (BFI): An integrative review. *Journal of Human Lactation*, *28*(3), 317–334.

Spencer, R. L., Greatrex-White, S., & Fraser, D. M. (2015). "I Thought It Would Keep Them All Quiet". Women's experiences of breastfeeding as illusions of compliance: An interpretive phenomenological study. *Journal of Advanced Nursing*, *71*(5), 1076–1086.

Symon, A. G., Whitford, H., & Dalzell, J. (2013). Infant feeding in Eastern Scotland: A longitudinal mixed methods evaluation of antenatal intentions and postnatal satisfaction-The Feeding Your Baby study. *Midwifery*, *29*(7), e49–e56 .Available at: http://dx.doi.org/10.1016/j.midw.2012.06.017

Thomson, G., & Dykes, F. (2011). Women's sense of coherence related to their infant feeding experiences. *Maternal and Child Nutrition*, *7*(2), 160–174.

UNICEF (2010). Bottle Feeding FAQs. Retrieved from http://www.unicef.org.uk/BabyFriendly/Health-Professionals/going-baby-friendly/FAQs/Bottle-feeding-FAQ/ [Accessed September 26, 2015].

UNICEF (2013). *The evidence and rationale for the UNICEF UK Baby Friendly Initiative standards*. UK: UNICEF.

UNICEF (2015). Definitions of breastfeeding categories. Retrieved from http://www.unicef.org.uk/Documents/Baby_Friendly/Research/infant_feeding_definitions.pdf?epslanguage=en

Viguera, A., Tondo, L., Koukopoulos, A. E., Reginaldi, D., Lepri, B., & Baldessarini, R. J. (2011). Episodes of mood disorders in 2,252 pregnancies and postpartum periods. *American Journal of Psychiatry*, *168*(11), 1179–1185.

Wenzel, A., Haugen, E. N., Jackson, L. C., Brendle, J. R. (2005). Anxiety symptoms and disorders at eight weeks postpartum. *Journal of Anxiety Disorders*, *19*(3), 295–311.

Williams, K., Donaghue, N., & Kurz, T. (2012). "Giving Guilt the Flick"?: An investigation of mothers' talk about guilt in relation to infant feeding. *Psychology of Women Quarterly*, *37*(1), 97–112.

WHO (2015). World Health Organisation Infant Feeding Recommendation. Retrieved from http://www.who.int/nutrition/topics/infantfeeding_recommendation/en/ [Accessed September 1, 2015].

Zimmerman, T. S., Aberle, J. T., Krafchick, J. L., Harvey, A. M., Schindler, T., & Aberle, J. T. (2008). Deconstructing the "Mommy Wars": The battle over the best mom. *Journal of Feminist Family Therapy*, *20*(3), 203–219.

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