

# Breastfeeding practices after a counselling intervention for factory workers in Bangladesh

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## Abstract

Breastfeeding may be particularly challenging for female factory workers who have long working hours and inadequate access to health information and care. In Chattogram, Bangladesh, a peer counselling intervention was undertaken to improve infant feeding practices of factory workers. Counselling started during pregnancy and continued until children were 18 months old. This article presents the results of a cross-sectional survey undertaken during 2 weeks in March–April 2017, after the project's conclusion. The aim was to compare breastfeeding practices, specifically early breastfeeding initiation and exclusive breastfeeding (EBF), among factory workers who had received peer counselling in the intervention areas (IA) with those of non-counselled factory workers in the nearby comparison areas (CA). Six female interviewers, trained over 3 days, conducted interviews at the workers' homes. Data were analysed to assess the association of peer counselling with infant feeding practices. Factory workers ( $N = 382$ ) with infants between 0 and 18 months of age participated in the survey, in IA ( $n = 188$ ) and in CA ( $n = 194$ ). Although there were more health facility deliveries among the CA workers, only 43 (22%) of those workers had initiated breastfeeding within 1 h of birth versus 166 (88%) of the IA workers ( $p < .001$ ). EBF prevalence on 24-h recall in infants aged 0–6 months was only 7/83 (8%) for the CA workers versus 73/75 (97%) for IA workers ( $p < .001$ ). The survey showed that breastfeeding practices of factory workers in the IA after the intervention were significantly better than those of factory workers in the CA.

## KEYWORDS

breastfeeding initiation, exclusive breastfeeding, factory workers, peer counsellors

## 1 | INTRODUCTION

Breastfeeding has innumerable benefits, both for infants (Choi, Kang, & Chung, 2018; Gertosio, Meazza, Pagani, & Bozzolo, 2016; Victora et al., 2016) and their mothers (Chowdhury et al., 2015; Nguyen et al., 2019), and must be promoted as a global public health intervention (World Health Assembly, 2018). Early initiation of

breastfeeding and exclusive breastfeeding (EBF) are key factors for obtaining these benefits (Binns, Lee, & Low, 2016; Kramer & Kakuma, 2012). EBF up to 6 months of age has both short- and long-term consequences on health and nutritional outcomes of children (Black et al., 2013; Horta & Victora, 2013). What makes breastfeeding promotion even more imperative is that after accounting for the economic losses of child and women's mortality and the cognitive

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losses due to not breastfeeding, the total global economic losses are estimated to be US\$341.3 billion or 0.70% of global gross national income (Walters, Phan, & Mathisen, 2019). The Bangladesh Demographic and Health Survey (BDHS) conducted in 2014 reported that initiation of breastfeeding within 1 h was only 51%, EBF in infants aged 0–6 months was 55%, and the median duration of EBF was 2.8 months as quoted by the National Institute of Population Research and Training [NIPORT]/Bangladesh, Mitra and Associates, and ICF International (2016). Factors that positively affected early breastfeeding initiation were rural versus urban location (rural, 53.4%; urban, 47.1%) and antenatal clinic attendance, whereas caesarean section and a higher level of education were negatively associated with early initiation (Islam et al., 2019). The same survey also showed that one third of children under 5 years were undernourished (NIPORT/Bangladesh, Mitra and Associates, and ICF International, 2016). This situation reflects the underlying causes of undernutrition including maternal education, child marriage and early first birth, sanitation and hand washing practices, access to food and healthcare and infant and young child feeding (IYCF). These factors were also identified by the main development partners supporting the Government of Bangladesh's efforts to reduce undernutrition through the United Nations Renewed Efforts Against Child Hunger and United States Agency for International Development (2014). Data from three national surveys, BDHS 2007, 2010 and 2014, were pooled, analysed and showed that if EBF was terminated during 0–2 months or 2–4 months, the odds of becoming underweight were 2.16 and 2.01 times higher, respectively, in infants for whom EBF was not terminated (Khan & Islam, 2017). An increasing trend in early initiation of breastfeeding (69%) and EBF through 0–6 months (65%) has been reported from the latest BDHS of 2017–2018 (NIPORT, Mitra and Associates, and ICF, 2019). Recent studies that have reported the negative effect on cognition of growth faltering in infants and young children in Bangladesh (Mahfuz et al., 2019; Nahar et al., 2020) add to the evidence that highlights why undernutrition must be prevented.

Health and nutrition programmes in Bangladesh currently provide breastfeeding messages and support to pregnant and lactating women attending health facilities, particularly in baby-friendly hospitals, and through outreach health workers at community level. No special efforts, however, have been made by the health services to reach employed women despite the large numbers employed in the ready-made garment (RMG) industry and other factories where long working hours, inadequate access to health information and time and space for breastfeeding/expressing breast milk (BM) make maintaining lactation particularly challenging. A small study commissioned by the United Nations Children's Fund (UNICEF, 2018) in two factories in Dhaka reported that only 17% of the factory workers with infants aged 2–6 months were EBF. In an earlier Ethiopian study, prevalence of EBF was 44% in employed and 65% in unemployed mothers (Taddele, Abebe, & Fentahun, 2014). Globally, employed women face structural barriers to maintain their lactation (Johnson, Kirk, & Muzik, 2015; Kozhimannil, Jou, Gjerdingen, & McGovern, 2016). In Bangladesh, children are affected by their mothers' employment in the RMG factories in several ways. Lack of adequate maternity protection,

### Key messages

- Despite similar demographic characteristics, there were striking differences in early initiation and exclusive breastfeeding practices in the peer counselled factory workers compared with the non-counselled factory workers.
- Non-counselled workers were much less likely to initiate breastfeeding in the first hour and exclusively breastfeed infants under 6 months of age.
- Provision of skilled community-based peer counsellors should be considered by factories employing female workers to improve their infants' health outcomes.

inadequate breastfeeding support, poor access to quality childcare, long working hours and low wages can directly affect the situation of working mothers and their children, and this is supported by surveys that have shown breastfeeding prevalence to be as low as 10% among RMG workers (UNICEF, 2019). According to a recent report, many women in the RMG sector are deprived of legitimate benefits like paid maternity leave. Most of the factory workers surveyed said that they were unaware about their legal rights for paid maternity leave, and many of the included factories did not adhere to the national legal requirements for paid maternity leave or on-site childcare facilities (Awaj Foundation and Fair Labor Association, 2019).

Community-based peer support initiatives in low-, middle- and high-income countries have been effective in improving breastfeeding practices, including early initiation of breastfeeding (Shakya et al., 2017). In Bangladesh, the importance of the peer-to-peer relationship in providing support to women to breastfeed exclusively has been shown to be successful (Haider & Saha, 2016; Haider & Thorley, 2020) and has further been demonstrated in a structured interview study (Mihirshahi et al., 2019). However, there is a need to improve community-level breastfeeding support and counselling for garment factory workers, including development of problem-solving skills, as has been pointed out in Cambodia (Bazzano, Oberhelman, Potts, Taub, & Var, 2015). Gaining access to factory workers at their workplaces is not easy; nonetheless, a community-based peer counselling longitudinal intervention for pregnant and lactating women was implemented successfully for factory workers at their homes in Chattogram, Bangladesh (Haider & Thorley, 2020). The aim of the intervention was to test the effects of a peer counselling programme on breastfeeding practices in a population of factory workers in the absence of other breastfeeding initiatives. There was, however, no report about breastfeeding practices of factory workers in general during the same period. After seeing the preliminary reports at the end of that intervention, it was decided that a cross-sectional survey would be required to compare the infant feeding practices of factory workers who had received the peer counselling services in the intervention areas (IA) with those of workers who had not received

these services in the neighbouring comparison areas (CA); this study documents that comparison.

## 2 | METHODS

### 2.1 | Study context and description of intervention

The peer counsellors encouraged standard maternity care (antenatal checks, personal hygiene, rest and safe delivery) and provided essential information on optimal breastfeeding, care of infants and mother's diet to the pregnant workers and their family members during the home visits. After delivery, the peer counsellors helped the new mothers with correct positioning and attachment of the infant at the breast, demonstrated how to hand express and store the mother's milk, showed caregivers how to warm and feed the expressed milk with a small medicine cup, discouraged use of bottles, encouraged fathers' involvement in infant care and recorded the workers' and their infants' weights. At each home visit, the peer counsellor tried to increase the worker's confidence so that she could continue to work and breastfeed, requested family support and advised regular immunization and timely access to healthcare. The full description of the peer counselling intervention has been published earlier (Haider & Thorley, 2020). The peer counsellors were selected and trained similarly to what has been described elsewhere (Haider & Saha, 2016).

The survey and comparative analysis methods are presented below.

### 2.2 | Survey design

This was an end-line quantitative cross-sectional survey of feeding practices of both counselled and non-counselled factory workers with infants and young children aged 0–18 months. A total of 456 factory workers were enrolled during pregnancy (from the 5th month onwards) for the peer counselling intervention. However, due to several resignations during pregnancy and after delivery and loss to follow-up, only 202 workers were still employed at 2 months and continued the intervention. For the survey, 188/202 workers were available. There were no differences in the participant characteristics of these three groups.

### 2.3 | Setting

The study areas were in urban and rural areas of Chattogram in the south-east part of the country. The urban IA were in the city (*Colonel Haat, Bitac Bazar, Sagorika, Bonikpara and Sagar par*), and the rural IA were in Anowara upazila (*Amanullah para, Boirag, Dakhin Bandor and Uttar Bandor*). The urban CA were in the areas where the export zone factory workers resided (*Free Port*) and other areas (*Mailer Matha, Barister College and Chowdhury para*) beyond the far end of each peer counsellor's coverage area. Only the Free Fort area (CA) in the city

was an exception. It was much further from the IA but selected as a large number of workers employed by different factories lived there. The CA in rural Anowara were at the other end of the above-named *paras* (neighbourhoods) in Anowara. About 15 days prior to the survey, the peer counsellors went from building to building in residential areas in the CA enquiring where factory workers with children below 18 months lived. They prepared a list with numbers and locations of infants and children in each age group, shared the information with the supervisor who checked it against the sample size required for each group and then advised interviewers to stop after the anticipated required sample size had been reached. After meeting the worker and the head of the household, they briefly explained the objectives of the planned survey and, after receiving their verbal consent, marked those houses and prepared a list. The interviewers subsequently followed this list during the actual survey. In the IA, the peer counsellors pointed out the workers' homes (which also had project ID numbers marked on the doors) to the interviewers at the time of the survey but did not enter with them.

### 2.4 | Study participants' eligibility criteria

The factory workers (mothers) were eligible if they and their infants and young children had no serious illness, were willing to be interviewed by external female interviewers from Chattogram and gave verbal consent for the survey. Sample size ( $n = 692$  per group) was calculated post hoc using the formula in Appendix A. An erroneous sample size had been initially calculated and guided data collection. However, we had assumed a small effect size in that calculation, and the actual effect size was large enough to yield a statistically significant difference between the groups for our main outcomes of interest. We calculated power using the identified proportions and sample size (SAS version 9.4, Cary, NC). It was greater than 0.999 for both outcomes due to the large difference in proportions between the two groups.

### 2.5 | The survey

The survey was undertaken over 2 weeks in March–April 2017 during evening hours on weekdays and in the morning/afternoon on public holidays.

Six female interviewers, trained over 3 days by experienced trainers, conducted interviews lasting 30–45 min with the available 188/202 factory workers who had received the peer counselling services in the IA and 194 who had not received these services in the nearby CA. In the IA, there were fewer workers with infants below 6 months of age because as the intervention progressed, infants had moved into the 7–18 months age group. Peer counsellors stopped following the workers whose children had completed 18 months ( $n = 18$ ), and they were not interviewed. There were no documented refusals for the survey from either area. Random selection of workers for the survey was not possible as the small numbers of counselled

workers available with infants in the specific age groups (0–3, 4–6, 7–12 and 13–18) did not allow that. Neither could the interviewers be blinded because the answers to the question about whether they had received any breastfeeding information and by whom made it obvious if they had received any peer counselling intervention. Peer counsellors did not enter the IA homes during the interviews to prevent workers being influenced by their presence. Data collection forms were checked every evening by three supervisors who visited the workers again to correct the forms if needed or to add any missing information.

## 2.6 | Outcome measures

The primary outcomes of the evaluation were the proportions of workers who had initiated breastfeeding within 1 h of birth and whether they practiced EBF or non-EBF at 6 months. World Health Organization (WHO) guidelines were followed to describe exclusive and predominant breastfeeding. EBF was defined as the infant receiving milk from the mother or a wet nurse with no other food or drink except syrup medicine and oral rehydration solution. If water, honey, sugar water or other foods were fed in the first 3 days of life or later on, the infants were recorded as predominantly breastfed (WHO, 2008). If other milk or solids or semi-solid foods were given in addition to BM before 6 months, they were termed as *partially breastfed* (Labbok & Krasovec, 1990).

All the survey questions were addressed to and answered by the mother of the index child in both IA and CA. Only if the mother did not remember when breastfeeding was initiated, this information was obtained from the family member who was present at the time of delivery (by asking how many hours after birth the infant was first put to the breast and started suckling). If the infant's age was below 6 months, the mother was asked, 'What did you feed the baby in the last 24 hours?'. If the mother said she had fed only BM, probing questions were asked and boxes ticked for only water/BM plus other milk/BM plus semi-solids/BM and other milk and semi-solids/or only other milk or solids (No BM). Feeding history was also noted from birth until the interview day.

If the baby was older than 6 months, the mother was asked, 'What was the baby fed in the first 6 months of life?' and answers noted. Next, she was asked two questions. First, 'At what age was the child given liquids other than breast milk for the first time?' Second, 'At what age was the child first fed semi-solid/solid food?' The answers were written in days/months.

Infants fed with expressed human milk (HM) by cup or spoon or bottle in the workers' absence were included among the EBF. Infants who had received anything to drink from a bottle in the last 24 h were recorded as 'bottle fed' and the reasons noted.

## 2.7 | Statistical analysis

Participant characteristics are presented in Tables 1 and 2. The main outcome data, namely, the initiation of breastfeeding and the

practice of EBF (feeding only HM directly or expressed), were reported using proportions of workers in each group (Table 2 and Figure 1).

All differences between the groups were tested using Pearson's  $\chi^2$  test in SPSS version 26 (SPSS Inc., Chicago, USA).

## 2.8 | Ethical considerations

Ethical approval was obtained from the Bangladesh Medical Research Council for the survey.

## 3 | RESULTS

A total of 382 female factory workers could be enrolled in the survey, IA ( $n = 188$ ) and CA ( $n = 194$ ), falling short of the desired sample size. Among them, 75 workers in the IA and 83 workers in the CA had infants below 6 months. The socio-demographic data showed differences in the number of living children; 5% of the workers in the IA had three children compared with 11% in the CA. Seventy-five (39.9%) of the infants in the IA were aged between 0 and 6 months, similar to 83 (42.8%) in the CA, but the majority of IA infants were in the age groups 0–3 and 7–12 months, whereas those in the CA were in the 4–6 and 13–18 months age groups. The educational levels of the majority of respondents in both areas were similar, and although more workers in the IA had no formal education and more in the CA had >10 years of education, these numbers were small, and consequently, there was no significant difference in education between workers in IA and CA (Table 1). The number of husbands with more than 10 years of education was higher in the CA. There were significant differences in all the variables related to pregnancy, including the person who provided breastfeeding information and showed how to feed the coming baby. After delivery, it was again the peer counsellors who checked and improved the position and attachment of the infant at the breast in the IA within 48–72 h in case of home deliveries or soon after they returned from the hospital or clinic, whereas this was done mostly by the relatives or the physician in the CA (Table 2).

In the IA, 73/75 (97.3%) of the factory workers with infants aged 0–6 months had fed HM exclusively in the last 24 h compared with only 7/83 (8.4%) in the CA ( $p < .001$ ). In the CA, 4/83 (4.8%) infants were non-breastfed (Figure 1). Again in the CA, only about half of the infants were exclusively breastfed when they were below 2 months, whereas most of the infants continued to be exclusively fed HM at all age groups to 6 months in the IA (Figure 2). When asked what the infants had been fed from birth until the day of the interview, the response was only BM for 100/113 (88.5%) workers in the IA and for only 1/111 (0.9%) workers in the CA. Similarly, for infants older than 6 months in the CA, 60% of their mothers reported that they had started feeding liquids and other milk within the first 2 months, compared with 92% of infants in the IA who only started them after completing 6 months (Figure 3). Among infants and young children 0–18 months old, only 16/188 (7.5%) in the IA were bottle-fed a liquid (expressed HM, water or other

**TABLE 1** Socio-demographic characteristics of the female factory workers with children 0–18 months of age

	Intervention area N = 188, no. (%)	Comparison area N = 194, no. (%)	p value*
Factory workers' age (years)			
<18	0	1 (0.5)	.544
18–30	182 (96.8)	178 (91.8)	
>30	6 (3.2)	15 (7.7)	
Factory workers' education (years)			
Nil	23 (12.2)	19 (9.8)	.521
1–5	112 (59.6)	112 (57.7)	
6–10	46 (24.5)	50 (25.8)	
>10	7 (3.7)	13 (6.7)	
Religion			
Muslim	160 (85.1)	162 (83.5)	.102
Hindu	26 (13.8)	23 (11.9)	
Buddhist	2 (1.1)	9 (4.6)	
Number of living children			
One	100 (53.2)	103 (53.1)	.048
Two	79 (42.0)	69 (35.6)	
Three or more	9 (4.8)	22 (11.3)	
Gender of the child			
Male	91 (48.4)	88 (45.4)	.311
Female	97 (51.6)	106 (54.6)	
Age of the child (months)			
0–3	48 (25.5)	26 (13.4)	.000
4–6	27 (14.4)	57 (29.4)	
7–12	62 (33.0)	54 (27.8)	
13–18	51 (27.1)	57 (29.4)	
Husbands' education (years) <sup>a</sup>			
Nil	23 (12.3)	22 (11.3)	.048
1–5	105 (56.1)	92 (47.4)	
6–10	50 (26.7)	56 (28.9)	
>10	9 (4.8)	24 (12.4)	
Husbands' occupation			
Employee	83 (44.4)	95 (49.0)	.060
Day labourer	40 (21.4)	46 (23.7)	
Small business	20 (10.7)	23 (11.9)	
Rickshaw puller/auto driver	21 (11.2)	11 (5.7)	
Car driver	17 (9.1)	7 (3.6)	
Others <sup>b</sup>	6 (3.2)	12 (6.2)	
Total family income (BDT) <sup>c</sup>			
7000–15,000	66 (35.1)	61 (32.1)	.805
15,001–20,000	108 (57.4)	113 (59.5)	
>20,000	14 (7.4)	16 (8.4)	

Abbreviation: BDT, Bangladesh takas.

<sup>a</sup>One husband among the intervention group had died before the survey, and education was unknown for four husbands in the comparison area.

<sup>b</sup>Others—farmer/employed abroad/tailor/fisherman.

<sup>c</sup>Husbands' income missing for four participants in the comparison area.

\* $\chi^2$  test.

**TABLE 2** Pregnancy and delivery details of workers with children aged 0–18 months in intervention and comparison areas

Variable	Intervention area N = 188, n (%)	Comparison area N = 194, n (%)	p value*
No. of antenatal care visits			
<4 visits	92 (48.9)	163 (84.0)	
4 or more visits	96 (51.1)	31 (16.0)	.000
Explained in pregnancy about what care should be taken and how to feed the coming child			
Yes	188 (100)	78 (40.2)	.000
No	0 (0)	116 (59.8)	
BF information given mostly by <sup>a</sup>			.000
Peer counsellor	187 (99.5)	0	
NGO health worker	0	12 (15.4)	
Relatives/neighbours/friends	1 (0.5)	16 (20.5)	
Doctor	0	50 (64.1)	
Iron folate tablets taken during pregnancy	187 (99.5)	149 (76.8)	.000
Delivery at			.001
Home	92 (48.9)	97 (50.0)	
Hospital/clinic	77 (40.9)	94 (48.5)	
Birthing hut	19 (10.1)	3 (1.5)	
Delivered by			.000
Doctor or nurse	96 (51.1)	108 (55.7)	
Trained birth attendant	60 (31.9)	23 (11.8)	
Untrained birth attendant	32 (17.0)	63 (32.5)	
Delivery type			.284
Normal/vaginal	161 (85.6)	161 (83.0)	
Surgical/assisted	27 (14.4)	33 (17.0)	
When infant was first breastfed			.000
Within 1 h of birth	166 (88.3)	43 (22.2)	
Within 1–3 h of birth	18 (9.6)	101 (52.1)	
After 1 day	2 (1.1)	21 (10.8)	
After 2–3 days	2 (1.1)	25 (12.9)	
Does not know or remember	0	4 (2.1)	
Observed demonstration or received helped with how to hold the baby and attach to the breast after delivery			.000
Yes	188 (100)	68 (35.1)	
No	0	126 (64.9)	
Who showed or helped with position and attachment			.000
Trained birth attendant	188 (100)	1 (1.5)	
Peer counsellor	0	0	
Relatives	0	30 (44.1)	
Doctor	0	22 (32.4)	
Nurse	0	12 (17.6)	
NGO health staff	0	3 (4.4)	

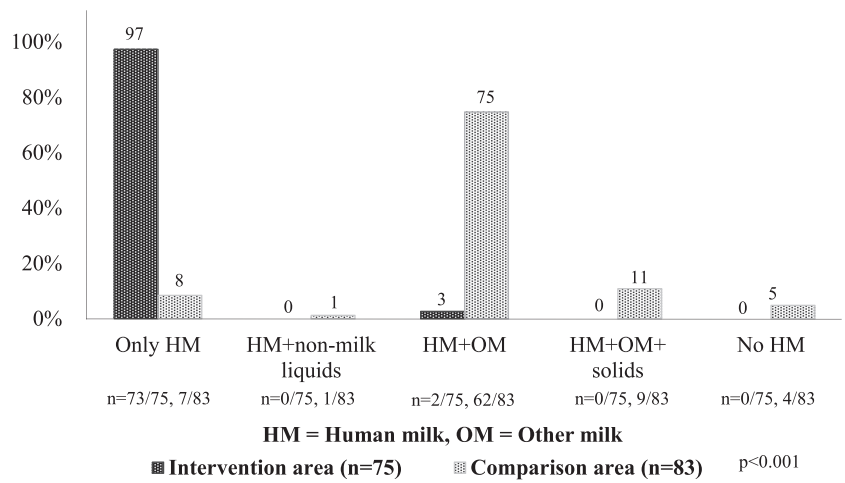
Abbreviations: BF, breastfeeding; NGO, non-government organization.

<sup>a</sup>n = 188 for intervention area and 78 for comparison area.

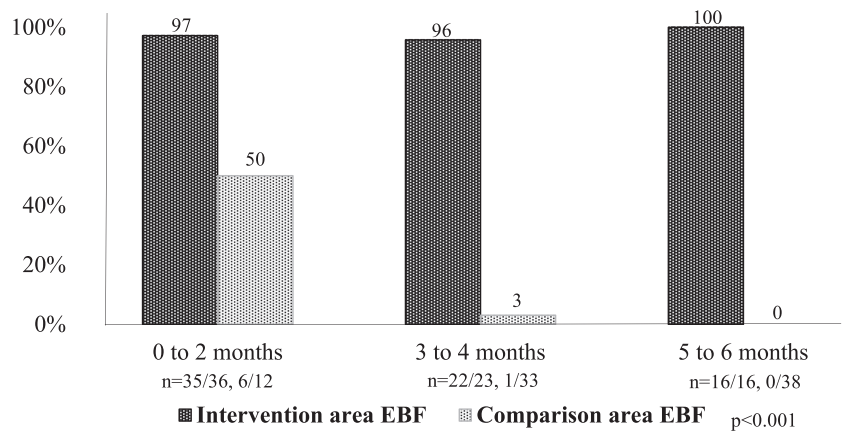
\* $\chi^2$  tests for all variables.



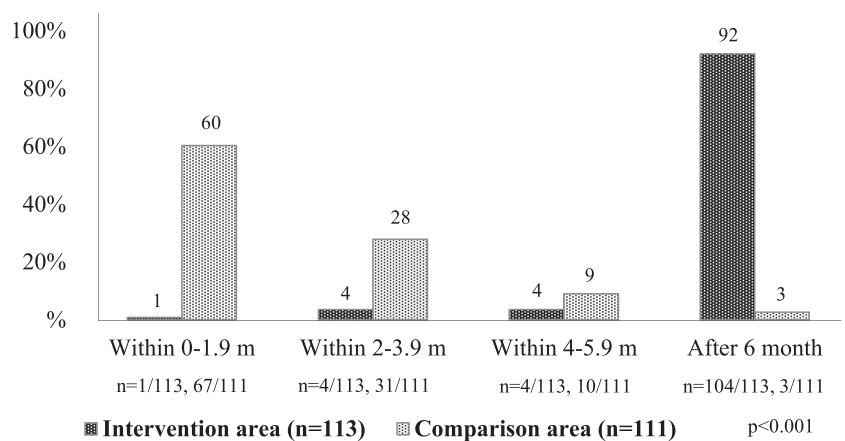
**FIGURE 1** Feeding status of infants below 6 months of age in intervention and comparison areas (24-h recall). Abbreviations: HM, human milk; OM, other milk



**FIGURE 2** Proportion of exclusively breastfed infants in different age groups. Abbreviation: EBF, exclusive breastfeeding



**FIGURE 3** When infants over 6 months were first fed other liquids



milk) versus 183/194 (94.3%) in the CA ( $p < .000$ ). Also, among the 0- to 6-month-old infants in the CA, the mothers of 40 infants had stopped feeding HM, 10 within the first 2 months compared with only 1 in the IA at 5 months. When the workers were at work in the factories, the

caregivers were mostly their mothers or mothers-in-law in both the areas, 106 (56.4%) in the IA and 85 (43.8%) in the CA, but in the latter area, 33 (17%) non-related caregivers in the neighbourhood were also employed to look after these infants.

## 4 | DISCUSSION

To our knowledge, this is the first study to compare and report the breastfeeding practices of two large groups of factory workers: one which received a peer counselling intervention and the other which did not receive this specific intervention. Striking differences were seen between the breastfeeding practices of workers in the counselled IA and the non-counselled CA. This is despite the fact that public health messages disseminated on a mass scale through television and radio include information about early initiation and EBF for 6 months and are expected to be shared further by facility and community health and nutrition workers. Early initiation of breastfeeding is promoted as it is an important factor for decreasing neonatal mortality (Phukan, Ranjan, & Dwivedi, 2018; Smith et al., 2017; Takahashi et al., 2017), in addition to facilitating the subsequent practice of EBF. An Indonesian study reported that early initiation was associated with a 3.66 times higher likelihood of EBF (Parashmanti, Hadi, & Gunawan, 2016). Maternal knowledge about EBF and health personnel's support at delivery have shown to be inversely associated with delayed initiation of breastfeeding (Adugna, 2014). Our survey showed that initiation of breastfeeding within 1 h in the CA was about half that of the national rates of 51% in the 2015 BDHS (NIPORT/Bangladesh, Mitra and Associates, and ICF International, 2016), even though the husbands were more educated and hospital deliveries were higher in this group than in the IA. This implies that either the factory workers did not hear or understand the early initiation message or that the health staff did not ensure breastfeeding occurred within 1 h. In some neighbouring countries, the early breastfeeding initiation rates are quite variable: from 23% in India (National Family Health Survey-4 [NFHS-4], 2015–2016) to 20% in Pakistan (National Institute of Population Studies [NIPS; Pakistan] and ICF, 2019), to 55% in Nepal (Ministry of Health [MOH]/Nepal, New ERA/Nepal, and ICF, 2017) and to 90% in Sri Lanka (Department of Census and Statistics, Ministry of Health, Nutrition and Indigenous Medicine, 2017), but these survey populations were nationally representative and not exclusively for factory workers.

In Kandy, Sri Lanka, employed mothers had a threefold risk of discontinuing EBF early compared with unemployed mothers, presumed to be due to discrepancy in the maternity leave benefit in different work settings (Ratnayake & Rowel, 2018). There are discrepancies in maternity leave in Bangladesh also (Awaj Foundation and Fair Labor Association, 2019). The Government of Bangladesh has approved maternity leave of 6 months for the working mothers in the public sector, but as per the Labor Act, 2006 (subsequently replaced as Bangladesh Labor Act, 2013 [amended]), other working mothers are to be allotted 4 months of maternity leave, that is 8 weeks of prenatal leave and 8 weeks of postnatal leave, which is 2 months less than that of the public sector and thus discriminatory (The Daily Observer, 2017). The International Labour Organization (ILO) Convention, 2000 (C-183) includes nursing breaks during working hours for breastfeeding mothers as an integral component of the maternity rights standards, but this Convention has not been ratified by Bangladesh (ILO, 1996–2017). Many garment factories thus do not

give mothers space or time to breastfeed (UNICEF, 2019). These workplace obstacles were also echoed by factory workers in a recent report (Haider & Thorley, 2020). During maternity leave (paid or unpaid) in our survey, almost all the workers in the IA were breastfeeding exclusively, and this practice decreased by only 1% between 3 and 4 months after the workers resumed work at the factories. These rates were in sharp contrast with the CA workers where EBF rates were already low during maternity leave and dropped drastically by 3–4 months. The duration of EBF from birth to the current day was somewhat lower (86%) than the 24-h recall figures in the IA, which agrees with Pullum's (2014) argument that the direct indicator of duration will always be lower than the single point prevalence indicator. This figure, however, corresponds to the 87% EBF reported by employed women with infants aged 6 months in the longitudinal programme data in an earlier paper (Haider & Thorley, 2020). Again, the high EBF prevalence on 24-h recall in the 0- to 6-month-old infants in the survey was only slightly higher than the 92% EBF practiced for the complete 6 months that was reported by mothers of older infants (7–18 months), also in this survey. The recent BDHS 2017–2018 (NIPORT, Mitra and Associates, and ICF, 2019) was published at the end of 2019 but was not available when we undertook the survey. It is noteworthy that the recent national figures for early initiation of breastfeeding and for 0–6 months of EBF are still much lower than those obtained from the IA in our study.

There is agreement that mothers may overestimate the age of cessation of EBF on 24-h recall (Adampodi, Fernando, Dharmaratne, & Agampodi, 2011; Burnham et al., 2014; Coit, Grossman, Buczek, Feldman-Winter, & Merewood, 2012). Hussein et al. (2019) compared 24-h recall with recall since birth and attributed the overestimation of EBF in the 24-h recall method to collection of information for the previous day while not eliciting recall of any complementary foods given previously. In our survey, however, the CA participants were asked the same set of questions in the same way as were the IA participants, including probing for other liquids and foods that may have been given; thus, any recall bias is likely to be similar for both groups.

Considering the workplace barriers, how then did the IA factory workers manage to breastfeed exclusively for 6 months? Our survey points to certain factors. They received breastfeeding information at home from their peer counsellors, and as the counselling visits included the family members, the workers could be supported by them in their efforts to continue EBF. Health facility visits also gave an opportunity for some breastfeeding messages to be reinforced. Peer counsellors in the IA encouraged the workers to go for regular antenatal care (ANC), and thus, the number of workers with more than four antenatal contacts was twice as many as those in the CA. The ANC contacts of the CA workers, on the other hand, were even lower than the 31.2% reported at national level in the 2015 BDHS (NIPORT/Bangladesh, Mitra and Associates, and ICF International, 2016). The lower attendance may have been due to several reasons: either because workers did not want their supervisors to know they were pregnant (in case they were asked to resign) or because they could not go to government facilities because of long



working hours or to private clinics because of the cost (Akhter, Rutherford, & Chu, 2017).

Women should have clean, private facilities where they can express their milk at work and a safe and appropriate place to store it. In addition to the health checks during pregnancy, the workers should be informed about their legal entitlements, available space in their workplace and reasons why continued breastfeeding is important so that they can plan to breastfeed and at the same time be aware of obstacles that they may face on return to work (Brodrribb, 2015, 2019). High rates of continued exclusive feeding of HM in the IA are even more remarkable, considering the absence of lactation rooms and nursing breaks to support breastfeeding at their factories. It was only possible because of the high motivation of the IA workers who managed to find time and place to hand express their milk at work, store it in separate containers and bring/send it home for the caregiver to feed and to breastfed directly and frequently whenever they were at home where they were supported by the family (Haider & Thorley, 2019). Peer counsellors were instrumental in listening to the worker's problems, solving them and giving suggestions and confidence to carry on, as they did in a UK study (Thomson, Crossland, & Dykes, 2012). Appropriately trained community health workers have also achieved high rates of EBF in a large-scale multipronged intervention in Bangladesh (Menon et al., 2016). EBF prevalence in some of the South Asian countries varies as do the early initiation rates quoted in their last reported demographic health surveys: 48% in Pakistan (NIPS [Pakistan] and ICF, 2019), 55% in India (NFHS-4, 2015–2016), 66% in Nepal (MOH/Nepal, New ERA/Nepal, and ICF, 2017) and 82% in Sri Lanka (Department of Census and Statistics, Ministry of Health, Nutrition and Indigenous Medicine, 2017). Globally, in low- and middle-income countries, only 37% of the infants are reported as exclusively breastfed up to 6 months of age, although it is recognized that the protection, promotion and support of breastfeeding are essential for achievement of the Sustainable Development Goals (Victora et al., 2016). Guidelines for counselling women for improving breastfeeding practices that are now available (WHO, 2018) will help to further train health and nutrition workers for this purpose.

It is obvious that early introduction of animal milk and complementary foods before 6 months leads to the discontinuation of EBF (Reddy et al., 2019), whereas breastfeeding is protective against respiratory tract infections and diarrhoeal disease, which are major causes of infant morbidity (Raheem, Binns, & Chih, 2017). As pointed out by Cacho and Lawrence (2017), there is a direct contribution of HM to the infant's innate immunity, including the importance of its oligosaccharides in supporting the gut microbiome and for repair and regeneration. Certain infant feeding practices in the CA—including early introduction of animal milk and semi-solids, the higher bottle feeding rates in environments that are far from hygienic or desirable and the fact that about a quarter of the mothers ceased breastfeeding within the first 6 months—are all risk factors for increased morbidity and poor nutritional status as reported elsewhere (Sankar et al., 2015). Further investigation of

the reasons why foods and other substances are introduced early among this population of factory workers would inform future interventions.

It is recognized that promotion of appropriate IYCF practices is important for the reduction of child undernutrition (Jones et al., 2013; Menon, Bamezai, Subandoro, Ayoya, & Aguayo, 2015). Bangladesh's target indicators for 2025 include reducing child under 5 stunting to 25% and wasting to 8% and increasing the rate of EBF to 70% in infants under 6 months of age (Bulbul & Rashid, 2018). These targets will be difficult to achieve if the children of employed women, especially the vast majority of factory workers, are excluded from the current health and nutrition efforts. It is thus extremely important that employers and decision makers understand that a simple yet effective public health intervention such as peer counselling could lead to health benefits over a lifetime for all the children and their mothers. At the same time, it is also important for workplaces to acknowledge and support workers' lactation management needs and provide unrestricted paid time and a safe place to express and store milk (Alive & Thrive, 2014; World Alliance for Breastfeeding Action, 2008).

#### 4.1 | Limitations

This study relies on cross-sectional data, which limit interpretation due to the inability to definitively establish temporality between exposure and outcome and to rule out the effect of other factors on the outcome. Our single data collection point occurred after the intervention, but there was no prior baseline survey, so there may have been differences between the two groups before the intervention. However, we believe this is unlikely due to their general demographic comparability and residence in neighbouring areas. Furthermore, to our knowledge, there were no other national or local initiatives that could have affected breastfeeding differentially between the two groups. Additionally, the interviewers could not be blinded to which workers had received peer counselling because it was necessary to include a question about this in the interviews. The separate locations of the IA and CA groups may in any case have identified the participant's group to the interviewer. In addition, a 'social desirability bias' in the reporting of breastfeeding practices by the IA workers cannot be ruled out. The method of ascertaining EBF prevalence based on 24-h recall tends to overestimate the true proportion (Pullum, 2014), but that was unlikely to differ between groups. Strengths include the use of separate areas for recruitment of the IA and CA groups, respectively, to avoid confusion through contact between the individual workers.

## 5 | CONCLUSIONS

Despite a similar number of deliveries at health facilities experienced by the factory workers in the IA and CA in Chattogram, Bangladesh, early initiation of breastfeeding within 1 h of birth was markedly

different and so were the EBF practices afterwards. As reported here, provision of community-based peer counsellors may be an intervention that empowers and supports factory workers to adopt optimal breastfeeding practices. Similar outreach services could be considered by factories employing female workers to improve their infants' health outcomes. Further research into the reasons why foods and substances were introduced early in the CA could help to focus future interventions.

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## CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

## CONTRIBUTIONS

RH designed and conducted the survey, analysed and wrote the first and later drafts of the paper. RH, VT and JY together interpreted the results. RH, VT and JY collaborated to provide critical inputs to writing of the paper. VT and JY contributed to later drafts.

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#### APPENDIX A: FORMULA USED FOR SAMPLE SIZE CALCULATION

$$n = z^2 (p_1q_1 + p_2q_2) / d^2,$$

where  $n$  = the sample size in each group

$z$  = statistical certainty (for a 95% confidence level,  $z = 1.96$ )

$p_1$  = the estimated proportion in group one

$$q_1 = 1 - p_1$$

$p_2$  = the estimated proportion in group two

$$q_2 = 1 - p_2$$

$d$  = the desired precision in detecting a difference

This gives us:  $1.96 \times 2 (0.21 + 0.24) / 0.0025 = 691.49$ .

Source: Espuet (2001).