



# Assessment of Baby-Friendly Hospital Initiative and the International Code of Marketing of Breast milk Substitutes implementation at Ain Shams University Maternity Hospital. A cross sectional study

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## ABSTRACT

**Background** The Baby-Friendly Hospital Initiative (BFHI) is a powerful tool to improve global breastfeeding rates. **Objective:** To assess the degree of adherence to the ten steps of the BFHI and the International Code of Marketing of Breastmilk Substitutes (BMS), as well as to identify factors affecting compliance to the BFHI in Ain Shams University Maternity Hospital. **Methods:** A cross-sectional study was carried out on a systematic sample; data was collected from the hospital on two alternating days each week. The sample was 350 mothers and 100 healthcare workers (HCWs) at Ain Shams University Maternity Hospital. Two validated interview closed-ended questionnaires assessed sociodemographic data, maternal experiences during pregnancy, birth, and the maternity period, as well as HCWs' training and knowledge of the hospital's breastfeeding policy and barriers to implementing the BFHI. Additionally, an observational checklist evaluated the presence of a written policy in appropriate locations. **Results:** the mean age of mothers was 29±6 years and HCW at the hospital was 33.7±8 years. Ain Shams University Maternity Hospital adhered only to step 7 of the BFHI and the Code of marketing of BMS with high overall compliance to the Code (96.9%) and overall moderate compliance to BFHI. HCWs identified several key barriers affecting compliance to BFHI including lack of a clear and written breastfeeding policy (90%), insufficient staff training (90%), excessive workload (94%), mother-related factors (50%). **Conclusions:** Ain Shams University Maternity Hospital adhered to the code. However, there's a need for improvement regarding the BFHI Ten Steps.

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## INTRODUCTION

The Baby-Friendly Hospital Initiative (BFHI), launched in 1991 by WHO and UNICEF, is a cornerstone of the Global Strategy for Infant and Young Child Feeding.<sup>1</sup> It emphasizes adherence to the Ten Steps to Successful Breastfeeding and aligns with the 1981 International Code of Marketing of BMS.<sup>2</sup> The BFHI approach includes clear hospital policies, staff training, and support

for mothers from prenatal education to post-discharge. The program encourages practices like rooming-in, responsive feeding, and responsible formula use, while discouraging bottles and pacifiers.<sup>3</sup> The BFHI aims to protect, promote, and support breastfeeding in maternity and neonatal care facilities.<sup>4</sup> To complement these efforts, the International Code of Marketing of BMS regulates

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Table 1: The ten steps of BFHI criteria and UNECEF/WHO standards.

| Step   | Criteria   | UNECEF/<br>WHO<br>standards       |
|--|--|-----------------------------------|
| Step 1.<br>Breastfeeding policy.                 | <ul style="list-style-type: none"> <li>A review of the breastfeeding or infant feeding policy indicates that it covers the following topics adequately: The Ten Steps to Successful Breastfeeding and the Code of Marketing of Breast-milk Substitutes.</li> <li>Observations indicate that the policy is displayed in all appropriate areas of the facility in appropriate languages.</li> <li>Discussions with managers and staff indicate that staff is aware of the policy, and it is being appropriately implemented.</li> </ul>  | "Yes" for all items.              |
| Step 2.<br>Training about breastfeeding support. | <ul style="list-style-type: none"> <li>A review of the training curriculum indicates that: At least 80% of the clinical staff members responsible for the care of pregnant women, mothers and infants have been given training of at least 20 hours in length, and the training includes at least 3 hours of supervised clinical experience.</li> <li>The training curriculum cover the following topics adequately: the Ten Steps to Successful Breastfeeding, Mother-friendly care, the Code of Marketing of Breast-milk Substitutes and support for the non-breastfeeding mother</li> <li>Appropriate refresher training is provided for staff at least every two years.</li> </ul> | "Yes" for all items.              |
| Step 3.<br>Antenatal education                   | <ul style="list-style-type: none"> <li>Mothers had discussion at least two out of the following three key topics –skin-to-skin contact, rooming-in, and the risks of supplements.</li> </ul>   | ≥70%                              |
| Step 4.<br>Early initiation                      | <ul style="list-style-type: none"> <li>Infant was held within five minutes of birth.</li> <li>In "skin-to-skin" contact.</li> <li>For an hour or more.</li> <li>Help with breastfeeding.</li> <li>No delay or delay for justified reason.</li> </ul>   | ≥ 80% on 3 items and<br>≥50% on 2 |
| Step 5.<br>Maintaining lactation                 | <ul style="list-style-type: none"> <li>Help from staff received within 6 hours.</li> <li>Help with positioning and attachment.</li> <li>Help with milk expression by hand.</li> <li>Mothers taught hand expression of milk.</li> <li>Help to prepare and give infant's feeds for non-breastfeeding mothers.</li> </ul>   | ≥ 80% on 3 items and<br>≥50% on 2 |
| Step 6.<br>Exclusive Breastfeeding               | <ul style="list-style-type: none"> <li>No supplements.</li> </ul>  | ≥80%                              |
| Step 7.<br>Rooming in.                           | <ul style="list-style-type: none"> <li>For 24 hours.</li> </ul>  | ≥80%                              |
| Step 8.<br>Breastfeeding on demand               | <ul style="list-style-type: none"> <li>As often as infant wants.</li> <li>As long as infant wants.</li> </ul>  | ≥80%                              |
| Step 9.<br>no pacifiers or teats                 | <ul style="list-style-type: none"> <li>No bottles\teats.</li> <li>No pacifiers.</li> </ul>   | ≥80%                              |
| Step 10.<br>Support after discharge              | <ul style="list-style-type: none"> <li>Given suggestion.</li> <li>Appropriate suggestion.</li> </ul>   | ≥80%                              |

the marketing of formula to safeguard breastfeeding practices. Together, the BFHI and the Code work synergistically to create an environment that prioritizes breastfeeding for optimal infant health.<sup>2</sup> Previous studies showed that BFHI helps to successful breastfeeding at home and sustained, long-term exclusive breastfeeding.<sup>4</sup> While over 21,000 maternity facilities worldwide have achieved Baby-Friendly

Hospital designation, only 10% of global births occur in these facilities.<sup>5</sup>

Despite being an early adopter of the BFHI, with 126 hospitals certified by the mid-1990s<sup>6</sup>, Egypt continues to struggle with low exclusive breastfeeding rates, ranging from 13% to 29%.<sup>7,8</sup> Global exclusive breastfeeding rates have surged by 10 percentage points over the past decade, reaching 48% in 2023.<sup>9</sup> However, the country has experienced a decline in

continued breastfeeding rates from 2009 to 2015-2019.<sup>10</sup> Additionally, Egypt exhibits low implementation rates of the BFHI.<sup>11</sup> A multicentric survey showed that Ain Shams University Maternity Hospital meets BFHI global criteria for only steps 2, 6, 7 in 2018.<sup>12</sup> Recognizing this gap, UNICEF emphasizes the importance of continued BFHI implementation and ongoing monitoring of designated healthcare facilities. This study aimed to assess adherence to the Ten Steps of Baby-Friendly Hospital initiative and the International Code of Marketing of Breast-milk Substitutes in Ain Shams university maternity hospital according to the WHO/UNICEF BFHI Global Criteria.

## METHODS

A cross-sectional study was conducted among healthcare workers (HCWs) providing maternal and child health services at Ain Shams University Maternity Hospital including gynecology and obstetrics physicians, pediatricians, and nurses. The study also included mothers who had delivered at the hospital within 24 hours of their delivery. The study was conducted between July 2022 and January 2023. Ain Shams University Maternity Hospital is in El Abbasya square in Cairo and holds 476 beds divided among 6 units.

Inclusion criteria included HCWs providing maternal and child health services, including gynecologists, obstetricians, pediatricians, and nurses, who have been working at Ain Shams University Maternity Hospital for at least six months and agreed to participate in this study. Additionally, it included mothers who had delivered their babies at Ain Shams University Maternity Hospital within the previous 24 hours and agreed to participate in this study. The following were excluded, Mothers with babies in the NICU since birth and Mothers refusing to provide a consent.

The sample size was calculated as 100 HCW and 350 mothers by using Power Analysis and Sample Size Software (PASS 15) (Version 15.0.10), setting confidence level at 95%, margin of error  $\pm 0.10$  for HCW and  $\pm 0.05$  for mothers and after reviewing previous study results<sup>13</sup> showing that the rate of compliance to step 2 in Baby Friendly Hospital Initiative which includes training of HCW was 87.7% and to clinical practices (step 3-10) was 74.1%. A systematic random technique was utilized to collect

the data; data was collected from the hospital on two alternating days each week.

Data collection Three instruments were used to gather data: Two validated, closed-ended questionnaires developed by the UNICEF and WHO for monitoring Baby Friendly hospital initiative and an observational checklist<sup>14</sup>. The questionnaires were adapted by removal of HIV questions as it's not common in Egypt and combining breastfeeding mother's questionnaire with non-breastfeeding mother's one. Translated versions were adapted from Al-Jawaldeh's 2020 work. *Mothers' questionnaire* consisted of 3 sections: Sociodemographic, prenatal care, breastfeeding support. *Health care workers questionnaire* consisted of 4 sections: Sociodemographic characteristics, awareness of breastfeeding policies, training on breastfeeding, and barriers to implementing BFHI. *An observational check list*: to observe the presence of a summary of the policy that addresses the Ten Steps and the International Code of Marketing of BMS displayed in all appropriate areas of the facility and written with wording understood by mothers and staff.

Data analysis: Data was collected and revised for completeness and consistency. The collected data was processed, coded, tabulated and introduced to personal computer then analyzed using SPSS program (Statistical Package for Social Sciences) for windows Version 22. Qualitative data was presented using the frequency and its related percentage. Quantitative data was presented using mean and standard deviation. Chi-square test was used to examine the relationship between two qualitative variables but when the expected count is less than 5 in more than 20% of the cells; Fisher's Exact test was used. Independent t test was used to examine the relationship between two quantitative variables. Scores of the Baby-Friendly Hospital Initiative (BFHI) Implementation were calculated by the minimum UNICEF/WHO standards to assess adherence to each step of BFHI.<sup>14</sup> Each step consists of several elements that must meet WHO criteria to be considered fulfilled, as shown in Table 1. Percentage scores for each item of the steps and the code were summed, and the average was taken to estimate the total compliance. The global standards require a minimum of 80% compliance for almost all indicators. To determine the extent of the BFHI implementation, compliance was classified as low (< 50%), moderate (50–80%), and high (> 80%).<sup>14,16</sup>

Table 2: Mothers' experiences during their hospital stay, encompassing the antenatal, natal, and postnatal periods.

| Mothers' experiences during their hospital stay.                          | N   | %    |
|---|-----|------|
| Healthcare workers discussion with mothers during antenatal visits (N=79) |     |      |
| - Skin-to-skin contact.   | 25  | 31.6 |
| - Rooming in.   | 21  | 26.6 |
| - The risks of giving supplements.  | 38  | 48.1 |
| The time of first hold their infants (N=350)                              |     |      |
| - Immediately or within five minutes                                      | 112 | 32   |
| - Within half an hour or an hour  | 152 | 43.3 |
| - As soon as mother was able to respond.                                  | 47  | 13.4 |
| - Can't remember.   | 39  | 11.1 |
| - Have not held till the time of interview.                               | 0   | 0    |
| Method of first hold their infants (N=341)                                |     |      |
| - Skin-to-skin  | 57  | 16.7 |
| - Wrapped   | 284 | 83.3 |
| HCWs help mothers positioning for breastfeeding (N=350)                   |     |      |
| - Yes   | 199 | 56.9 |
| - No  | 139 | 39.7 |
| - The staff offered help, but I didn't need it                            | 12  | 3.4  |
| Advice about how often to feed infants (N=350)                            |     |      |
| - No advice given.  | 93  | 26.6 |
| - Every time an infant seems hungry.                                      | 93  | 26.6 |
| - Every hour  | 23  | 6.6  |
| - Every 1-2 hours   | 135 | 38.6 |
| - Every 2-3 hours   | 6   | 1.7  |
| Practicing rooming in (N=350)   | 325 | 92.9 |
| Introduction of Breast-milk substitutes. (N=350)                          | 86  | 24.6 |
| Mother were given promotion to breast-milk-substitutes (N=350)            | 22  | 6.3  |

## RESULTS

The current study was carried out on 350 mothers and 100 HCWs at Ain Shams University Maternity Hospital. The mean age of participated HCWs was 33.7±8 years. Most of them were nurses (45%), 29% were obstetrics and gynecology physicians and 26% were pediatricians. Moreover, 16% had less than 3 years working experience. Regarding HCWs' knowledge about breastfeeding hospital policy, 46% of HCWs had knowledge about presence of written breastfeeding policy in the hospital. Of the 46% healthcare workers who had knowledge about presence of breastfeeding policy in the hospital, 87% reported that the policy protects breast feeding, 87% also reported that the hospital policy prohibits distribution of gift packs.

Regarding participated mothers, the mean age of them was 29±6. Moreover, 76% of them were urban residents. Most of them (76.4%) were not working. However, most of them were postgraduates (43.1%). Furthermore, most family incomes of study participants were less than 2000 LE (58.4%). Table 2 shows the details of mothers' experiences during their hospital stay, encompassing the antenatal, natal, and postnatal periods.

A written summary of breastfeeding policy that addressed the Ten Steps, the International Code of Marketing of Breast-milk Substitutes was observed to be displayed in all relevant areas including the breastfeeding clinic, postoperative room, and NICU doors. It was translated into Arabic for accessibility. There was a gap in Step 1 regarding the breastfeeding policy as shown in Table 3; the WHO guidelines highlight three key elements for successful

Table (3) Adherence to hospital policy steps (steps 1 and 2) Baby Friendly Hospital initiative and International Code of Marketing of BMS and Minimum UNICEF/WHO Standards.

| Step   | Data source                       | Criteria  | Compliance to BFHI |      | UNECE/WHO standards |
|--|-----------------------------------|---|--------------------|------|---------------------|
|  |                                   |   | N                  | %    |                     |
| Step 1. Breastfeeding policy                 | Review of written materials       | Covers The Ten Steps to Successful Breastfeeding and The Code of Marketing of Breast milk Substitutes adequately.   | *                  | 100  | 100%                |
|  | Observational checklist           | Policy is displayed in all appropriate areas in appropriate languages.  |                    | 100  | 100%                |
|  | Interview                         | Staff is aware of the policy (N=100)  | 46                 | 46   | 100%                |
| Step 2. Training about breastfeeding support | Review of the training curriculum | Clinical staff have been given the training which lasted 20 hours including at least 3 hours of supervised clinical experience.                                   | 40                 | 40   | ≥ 80%               |
|  |                                   | The training curriculum covered The Ten Steps to Successful Breastfeeding, Mother-friendly care, and The Code of Marketing of Breast milk Substitutes adequately. | 40                 | 40   | ≥ 80%               |
|  | Interview                         | Appropriate refresher training is provided at least every two years (N=56)  | 28                 | 50   | 100%                |
| The Code of Marketing of BMS                 | A review of records and receipts  | Breast-milk substitutes are purchased for the wholesale price or more   | -                  | 100  | 100%                |
|  | Interview                         | Mothers never received leaflets or gifts or samples (N=350)   | 328                | 93.7 | ≥80%                |

\* For document reviews and observational checklist, a binary scoring system was used. A “yes” (equivalent to 100%) indicated data availability, while “no” (equivalent to 0%) indicated data absence. So, a hyphen (-) is used to indicate the absence of a number in these cases.

implementation. The first element, which is met, involves a written policy that adequately addresses both the Ten Steps to Successful Breastfeeding and the Code of Marketing of Breast-Milk Substitutes. The second element is also met “the policy is displayed in all relevant areas like the breastfeeding clinic, postoperative room, and NICU doors, with an Arabic translation for accessibility”. However, the area requiring improvement falls under the third element: staff awareness. Only 46% of staff currently acknowledge familiarity with the policy, which should encompass all HCWs according to WHO guidelines.

Regarding Step 2, Reviewing hospital records revealed that only 40% of HCWs had received the required 20 hours of accredited breastfeeding training, including supervised practice, since 2018 as shown in Table 3. While the training curriculum covered relevant topics, it fell short of the WHO guideline requiring 80% of staff to be trained. Although half (50%) of HCWs reported attending refresher training every two years,

this needs improvement to meet WHO recommendations which require refresher training for all HCWs at least every 2 years. Unfortunately, there is no fulfillment of Step 2 according to WHO guidelines. Table 4 shows a gap in Step 3 as regards antenatal education; Only 33% of mothers reported receiving information on at least two of the three key breastfeeding practices (skin-to-skin contact, rooming-in, avoiding unnecessary supplementation) during prenatal visits. The WHO guideline requires this information for at least 70% of mothers. Therefore, Step 3 is not fully fulfilled.

Regarding Early breastfeeding initiation practices (Step 4), while 32% of mothers reported immediate or near-immediate holding of their newborns, only 16.7% mothers reported holding them “skin-to-skin”. Additionally, approximately 54% of mothers reported that there was no delay in holding their newborns this first time or, if there was, it was for a justified medical

Table (4) Adherence to key clinical practice steps (step 3 through 10) Baby Friendly Hospital initiative, Based on Maternal Recall, and Minimum UNICEF/WHO Standards.

| Step                                | Criteria   | UNICEF/WHO standards              |
|-------------------------------------|--|-----------------------------------|
| Step 3.<br>Antenatal education      | <ul style="list-style-type: none"> <li>Mothers had discussion at least two out of the following three key topics –skin-to-skin contact, rooming-in, and the risks of supplements. (N=79)</li> </ul>  | ≥70%                              |
| Step 4.<br>Early initiation         | <ul style="list-style-type: none"> <li>The infant was held within five minutes of birth. (N=350)</li> <li>In “skin-to-skin” contact. (N=341)</li> <li>For an hour or more. (N=341)</li> <li>Help with breastfeeding (N=350)</li> <li>No delay or delay for justified reason (N=350)</li> </ul>   | ≥ 80% on 3 items and<br>≥50% on 2 |
| Step 5. Maintaining lactation       | <ul style="list-style-type: none"> <li>Help from staff received within 6 hours (N=350)</li> <li>Help with positioning and attachment (N=350)</li> <li>Help with milk expression by hand (N=350)</li> <li>Mothers taught hand expression (N=79)</li> <li>Help to prepare and give infant’s feeds for non-breastfeeding mothers. (N=77)</li> </ul> | ≥ 80% on 3 items and<br>≥50% on 2 |
| Step 6.<br>Exclusive Breastfeeding  | <ul style="list-style-type: none"> <li>No supplements (N=350)</li> </ul>   | ≥80%                              |
| Step 7.<br>Rooming in.              | <ul style="list-style-type: none"> <li>24 hours (N=350)</li> </ul>   | ≥80%                              |
| Step 8. Breastfeeding on demand     | <ul style="list-style-type: none"> <li>As often as an infant wants (N=350)</li> <li>As long as an infant wants (N=350)</li> </ul>  | ≥80%                              |
| Step 9: no pacifiers or teats       | <ul style="list-style-type: none"> <li>No bottles\teats (N=86)</li> <li>No pacifiers (N=350)</li> </ul>  | ≥80%                              |
| Step 10.<br>Support after discharge | <ul style="list-style-type: none"> <li>Given suggestion (N=350)</li> <li>Appropriate suggestion (N=38)</li> </ul>  | ≥80%                              |

\*N varies between variables depending on whether the mother received the specified support. (N reflects the number of mothers who received the corresponding service)

reason (child needed help/observation, mother recovering from anesthesia, or other valid reason). On the other hand, only 2.6% of mothers held their newborns for an hour or more. Additionally, nearly half (47.1%) reported they were encouraged to understand signs that their babies were ready to feed and offered help with breastfeeding by HCWs when their newborns were with them for the first time. This step needs improvement to meet the WHO target of 80% of mothers experiencing at least three out of the listed practices for early breastfeeding and 50% for two items. So unfortunately, Step 4 fell short of WHO recommendations (Table 4).

Unfortunately, Step 5 fell short of WHO guidelines (Table 4); While most mothers (84%) received initial breastfeeding help after delivery, support for established breastfeeding needs improvement. Only

57% reported receiving help with positioning and attachment before discharge, and just half (51.1%) learned about milk expression by hand. WHO guidelines for Step 5 recommend support for at least 80% of mothers, including at least three out of the listed lactation support practices.

Regarding Step 6, most participating mothers (75.4%) practiced exclusive breastfeeding. As regards Step 8, only 26.6% of mothers reported receiving advice on feeding on demand, and 23.7% on unrestricted feeding duration. Consequently, both Step 6 and Step 8 failed to meet the 80% threshold for fulfillment as shown in Table 4.

As for Step 7, all mothers (100%) reported that their babies were always with them both day and night, except for justified reasons denoting fulfillment of step 7 as shown in Table 4.

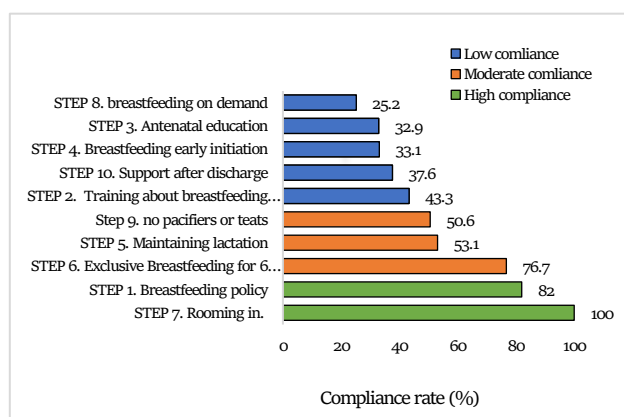


Figure 1: Compliance with the ten steps to successful breastfeeding

Most mothers (80.9%) reported that their newborns never used a pacifier, and nearly a quarter (27%) reported no bottle-feeding. Additionally, only 11% received suggestions for breastfeeding support from HCWs, and of those, only 63.5% could identify helpful resources (hospital or healthcare practitioners). These findings indicate insufficient adherence to WHO recommendations for post-natal breastfeeding support (Steps 9 and 10), which require at least 80% of mothers to receive such support (Table 4).

Regarding adherence to the World Health Organization's International Code of Marketing of Breast-milk Substitutes, Ain Shams University Maternity Hospital showed that 93.7% of mothers reported never receiving promotional materials, gifts, or formula samples from formula companies during their stay, exceeding the WHO requirement of at least 80%. Hospital records further confirm that breast-milk substitutes are purchased at wholesale prices, fulfilling both key elements of the WHO guidelines, as shown in Table 4.

As shown in Figure 1, the hospital had a high compliance with the International Code (96.9%) and moderate compliance with the Ten Steps (52.4%).

HCWs identified several key barriers for implementing the BFHI including: weak leadership commitment (20%), lack of a clear and written breastfeeding policy (90%), insufficient staff training (90%), excessive workload (94%), inadequate resources; like health education materials and sufficient budget (80%), mother-related factors (50%), lack of breastfeeding facilities; lactation rooms(10%), negative attitudes towards breastfeeding (9%), and the influence of breast-milk substitute marketing (11%, Figure 2).



Figure 2: Barriers to implementing BFHI in HCWs' perspective.

## DISCUSSION

Regarding Step 1 (Breastfeeding policy), knowledge of the hospital's breastfeeding policy among healthcare workers was notably compared to a previous study<sup>13</sup> of 408 healthcare workers at Al-Zahraa University Hospital in Egypt. This earlier study assessed healthcare worker knowledge, attitudes, and practices related to the Baby-Friendly Hospital Initiative and the Code. This low knowledge is further supported by poor training as shown in step 2.

As regards Step 2 (Training about breastfeeding support), only 40% of HCWs received initial breastfeeding promotion training, and half of them reported receiving refresher training every two years. This lack of training is likely due to poor coordination among staff and outdated hospital procedures. Furthermore, the rate of breastfeeding and infant feeding training in the current study is lower than that reported by a study<sup>17</sup> conducted in Côte d'Ivoire (63.6%), which involved a sample of 42 facilities, 330 mothers, and 129 health workers. On the other hand, regarding the code of marketing of breast-milk substitutes, approximately 94% of mothers participating in the current study denied getting promotion of breast-milk substitutes while being in the hospital. This rate exceeds that of Côte d'Ivoire study where mothers reported being advised to give non-breast milk (57.6%) and some even received formula recommendations (43.3%).

The current study demonstrated higher rates of antenatal education (Step 3) on key breastfeeding topics compared to a previous analytical cross-sectional study<sup>18</sup> conducted on 584 mothers in different Saudi Arabian hospitals. While the average



number of antenatal visits was lower in the current study ( $1 \pm 2.35$ ) than in the Saudi Arabian study ( $8.3 \pm 4.4$ ), a greater proportion of mothers reported discussing rooming-in (26.6% vs. 14.6%) and skin-to-skin contact (31.6% vs. 23.6%).

On the other hand, the current study revealed low rates of Early initiation of breastfeeding (Step 4); 32% immediate initiation, 16.7% skin-to-skin contact, these rates were lower than those reported in the Saudi Arabian study. The Saudi Arabian study found that 36.8% of mothers held their babies unwrapped and 39.8% initiated breastfeeding immediately after delivery. Additionally, 47.1% of mothers in the current study reported healthcare worker encouragement to identify infant feeding cues, compared to 43.3% in the Saudi Arabian hospitals.

The current study demonstrated positive outcomes in Step 5 (maintaining lactation). A higher percentage of mothers in the current study received immediate breastfeeding assistance upon arriving in their rooms and lower rates of help with positioning compared to the Saudi Arabian study. However, the Saudi Arabian study reported a higher rate of help with expressing milk by hand.

Overall, while some aspects of breastfeeding care were better in the current study compared to the Saudi Arabian benchmark, Steps 3, 4 and 5 still fell short of WHO recommendations. The discrepancy may be attributed to inconsistent understanding of Baby-Friendly Hospital Initiative (BFHI) guidelines among HCWs and in adequate training of them.

Regarding Step 6 (Exclusive breastfeeding), in the current study, 75.4% of mothers exclusively breastfed. This rate was higher than that found in a previous study<sup>19</sup> conducted in El Hussein Hospital in Cairo to evaluate and prepare Al-Hussein University Hospital (Pediatric department) to attain the designation of baby-friendly hospital which found an exclusive breastfeeding rate of 48.6%. this indicates that the current hospital is more successful in implementing practices that support and encourage exclusive breastfeeding. This could be due to various factors such as increased awareness about the benefits of breastfeeding, and stronger support systems for mothers.

The current hospital boasts a higher rooming-in rate of 93% compared to a previous study<sup>20</sup> in Ghana, which reported a rate of 78.3% among 120 mothers and 60 HCWs. The Ghanaian study aimed to reassess

the hospital's compliance with the Ten Steps to Successful Breastfeeding and the Code. This marked difference suggests that the current hospital's policies and infrastructure are more effectively promoting uninterrupted mother-infant contact.

In contrast to the positive findings on rooming-in, the current hospital lags the Ghanaian hospital in promoting Breastfeeding on demand (Step 8). In the current study, 23.7% of HCWs encouraged breastfeeding for as long as desired. Additionally, only a smaller portion (26.6%) advised feeding based on the baby's hunger cues. On the other hand, The Ghanaian hospital reported a substantially higher rate of HCWs advising mothers to feed their babies based on hunger cues (87%). This indicates a potential gap in the current hospital's approach to breastfeeding support, highlighting the need for improved education and training for healthcare providers on responsive feeding practices.

Regarding Step 9 (No pacifiers) and Step 10 (Support after discharge), While most infants didn't use pacifiers, and nearly a quarter of mothers who gave supplements avoided bottles, post-discharge support remained low. Interestingly, a study<sup>21</sup> conducted in different hospitals in Maryland to evaluate the associations between degree of exposure to the Baby-Friendly 10 Steps and breastfeeding practices through the first 6 months, found a lower rate of pacifier use (10.4%) but a much higher percentage (84.6%) of mothers receiving support group referrals, suggesting alternative approaches to promote breastfeeding after discharge.

Finally, the current results indicate the highest compliance rates were achieved for Steps 7 and 1, while Steps 5, 6, and 9 demonstrated moderate adherence. However, Steps 2, 3, 4, 8, and 10 exhibited the lowest compliance. The facility has met WHO guidelines for adherence to the International Code of Marketing of Breast-milk Substitutes and Step 7.

According to a multicenter study<sup>22</sup> conducted in six Egyptian university hospitals, including Ain Shams University Hospital, the study aimed to compare monitoring activities for assessing the Baby-Friendly Hospital Initiative (BFHI) after implementation. The results showed that the overall mean score across the six universities was highest for the Code, followed by Step 2. The lowest mean score was for Step 4. Notably, Ain Shams University Hospital achieved the highest scores for Steps 6, 7, and the Code.



The current study identified the primary barriers to BFHI implementation among HCWs as workload, lack of a clear breastfeeding policy, insufficient staff training, and a shortage of health education materials. These findings align with a qualitative study<sup>23</sup> conducted in Cairo university hospitals, which reported similar challenges: lack of staff training, heavy workload, and insufficient resources for training and educational materials.

## CONCLUSIONS

Ain Shams University Maternity Hospital has met WHO guidelines for adherence to the International Code of Marketing of Breast-milk Substitutes and Step 7. HCWs identified several key barriers to implementing the BFHI, including: the lack of a clear, written breastfeeding policy, insufficient staff training, excessive workload, and challenges related to mothers' knowledge, attitudes, or circumstances. The study emphasized the need to improve adherence to all BFHI steps by Improving antenatal preparation and post-natal follow-up support. Additionally, the study highlighted the need for HCWs to undergo accredited training on the BFHI program. Moreover, Further studies should be implemented in Ain Shams university maternity hospital to assess BFH steps implementation.

## Ethical Considerations

The study protocol was reviewed by the ethical review committee of Ain Shams University. Hospital administration approval was obtained. Verbal consent was obtained from all the study participants whether HCWs or mothers of targeted children before participation in the study. The study obtained all required approvals from the Institutional Review Board of Faculty of medicine, Ain Shams University (Approval number: FMASU MS 448/2023).

**Limitations:** The study was conducted solely at Ain Shams University Maternity Hospital so it could not compare breastfeeding practices at Ain Shams University Maternity Hospital with other maternity hospitals in Egypt.

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that could have appeared to influence the work reported in this paper.

**Author contributions:** Dalia Magdy Hussein: Concept, literature search, and drafting the manuscript; Hoda I. Fahim: data analysis, literature search, and drafting the manuscript; Amany Mohammed Sayed: critical review, and literature search; Dina Ahmed Gamal El Din: Concept, Critical review, and literature search.

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