

Enacting the code by effective national laws influence trends in exclusive breastfeeding: An analytical study from the East Mediterranean Region

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ABSTRACT

Introduction: Marketing of breast milk substitutes (MBMSs) are presumed to be associated with declines in breastfeeding practices. National laws to control the MBMS are expected to improve exclusive breastfeeding (EBF) and continued breastfeeding (CBF) rates. **Aim:** This study aims to study the effect of national laws that control MBMS on EBF and CBF trends in the East Mediterranean region (EMR) countries. **Methods:** EMR infant feeding data for EBF and CBF were derived from the Global database of the United Nations International Children's Emergency Fund/World Health Organization (WHO). Data for the code of MBMS came from the WHO report in 2020. Percent change in EBF and CBF over the past 3 decades was correlated with scores given to the national laws according to their coverage of the provisions under the code. **Results:** Percent change in EBF correlated significantly with the total score given to national laws ($r=0.8$; $p<0.001$) and with provisions for monitoring and enforcement, promotion to the general public, and engagement with health workers and health systems ($p<0.05$). CBF rates did not correlate with any of the scores for the national laws. Duration of the national law correlated with monitoring and enforcement ($p<0.05$). **Conclusion:** MBMS is the main drive for low EBF rates. National laws can directly influence early feeding practices only when all the provisions under the code are covered. National laws need to cover the code in its entirety.

Key words: Breast milk substitutes, Breastfeeding protection, Law enforcement, Marketing, Monitoring, Scores, The code

In 1981, the World Health Organization (WHO) called on all member states (MS) in the World Health Assembly (WHA) to adopt the International Code of marketing of breast milk substitutes (MBMSs) [1]. A series of subsequent resolutions relevant to the code were also adopted by the WHA which were collectively included within the context of the code [2]. However, the code is not a constitution in itself and requires MS to legislate it as a law within its country [3]. MS are expected to use the code MBMS in its entirety when drafting their national legal constitution and monitor its implementation through the NetCode toolkit of the WHO [4]. A report by the WHO showed that 165 countries (83%) out of 199 countries had made the code into a national legislation. Of these, 64% of the 165 countries adopted a law covering all provisions under the code [5]. Status of the code implementation in 2018 was updated in 2020 to cover all recently adopted national legal documents [5]. Furthermore, the guidance for implementation of the United Nations International Children's Emergency Fund (UNICEF)/WHO Baby-friendly Hospital

Initiative (BFHI) includes the revised 10 steps that emphasize breastfeeding protection by including the code in "Step 1," as the basis for promotion and support of breastfeeding [6]. Although breastfeeding support is standard care in clinical practice, yet promotion of breastfeeding without full protection against misinformation and marketing tactics is a waste of effort and time and can be counterproductive [7].

The WHO, UNICEF, and many scientific societies recommend exclusive breastfeeding (EBF) for the first 6 months of life and continued breastfeeding (CBF) for 2 years or beyond [8,9] due to the proven benefits of these practices [10]. However, the counter effects of MBMS have undermined all promotional efforts for breastfeeding by many countries [7]. Hence, it is a mandate for MS to take action to control such unethical practices [11] to prevent malnutrition and mortality from not breastfeeding [12,13].

The global nutrition targets agreed by the WHA in 2012, which were included in the Global Non-communicable diseases (NCD) targets [14] and Framework for action in the Second International Conference on Nutrition [15], call on member states to eliminate all forms of malnutrition by 2030 [16]. MBMS has been shown

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to have a considerable impact on breastfeeding practices [17]. A recent analysis of status implementation of the code at global level through national laws was conducted by the WHO and International Baby Food Action Network (IBFAN) [5]. The aim of this study was to examine the changing trends in EBF and CBF for 12 months in relation to the scores given to MS national laws that cover the provisions under the code in the East Mediterranean region (EMR).

METHODS

This study was based on review and reanalysis of global infant feeding data. Data included EBF and CBF for 12 months. EBF is defined as infants who received only breast milk (medications, vitamins, and minerals allowed) over the first 6 months of life. The source of data came from the UNICEF global databases for infant and young child feeding (IYCF) of EBF in 2019 [18]. CBF for 12 months is defined as infants who continued to receive breast milk with or without other foods and drinks up the age of 12-15 months. The data were derived from Global UNICEF Global Databases: IYCF for CBF in 2019 [19].

Data about the national legal measures were obtained by report of the WHO, UNICEF, and IBFAN for the status of implementing the international code of MBMS and subsequent relevant WHA resolutions including the guidance associated with WHA69.9 “The Code.” These data were presented in the WHO report by a scoring algorithm, assigning point values for each code provision, with a possible total of 100 points for measures that reflect all provisions in the code [5].

Selection of Countries under Study

EBF rates were studied in 15 of the 22 EMR that had at least three serial estimates of EBF rates over the past 30 years derived from national surveys consistent with Demographic Health Surveys (DHS). They included Afghanistan, Bahrain, Djibouti, Egypt, Jordan, Iraq, Iran, Morocco, Oman, Pakistan, State of Palestine, Syrian Arab Republic (AR), Somalia, Tunisia, and Yemen. CBF (12 months) rates were studied in 11 of the 22 EMR that had serial estimates from national surveys consistent with DHS methodologies (Egypt, Jordan, Iraq, Morocco, Oman, Pakistan, State of Palestine, Syrian AR, Somalia, Tunisia, and Yemen).

Countries with scores for the national laws that cover provisions of the code are 18 out of 22 EMR countries, that is, four countries have no national laws that cover the code. Of the 18 countries, 13 with code-related national laws had serial data for EBF or CBF rates were included in the study (Afghanistan, Bahrain, Djibouti, Egypt, Jordan, Iran, Iraq, Oman, State of Palestine, Pakistan, Syria AR, Tunisia, and Yemen). Trends in EBF were studied over a period of 30 years and divided according to the periods in which surveys were done from before the year 1990–2000 and thence 5 yearly periods over the two decades that followed.

The scores for the national laws with provisions related to the code for all the EMR countries in this study were derived from the global data from the WHO report in 2020 on code

implementation [5]. The State of Palestine was analyzed separately. This classification of countries and their legal measures were used to compare their effect on the changes (by percent increase or decrease) in EBF and CBF in the early half of the 3 decades, that is, 1990–2004 and 2005–2014 and between the last survey before 2019 and the previous survey. Countries were categorized by year of release of the law and the scores for the different articles under the code as to the extent of their inclusion of all the components under each article.

Statistical Analysis

Frequency distribution was used to compare the rates of EBF and CBF. Trends were presented by percent decrease or increase over a particular period using a mathematical formula for trends. The analysis of variance was used to compare the mean scores between country income groups by mean and standard deviation. The correlation coefficient was estimated by Spearman’s correlation for assessing relationships between non-parametric data. The cutoff of significance was $p=0.05$.

RESULTS

Table 1 demonstrates the scores given to national legal measures for provisions in the International Code of MBMS in EMR countries. There were four countries that had legal measures for the code before 2005 (30.77%) including Tunisia in 1983, Oman in 1998, Syria in 2000, and Yemen in 2002. There were nine countries of that had their legal measures enacted from 2009 and thereafter (69.23%).

Table 2 demonstrates percent changes for EBF and CBF rates for the EMR countries from the 1990s through to surveys conducted in the 2000s up to the year 2019. The surveys ranged 2–5 surveys over the entire period. Table 3 presents correlative studies between percent change in EBF and CBF of the most recent survey with previous survey with the scores given to provisions under the code covered by the national laws.

Fig. 1 illustrates the percent change in EBF over the past decades in the countries of the EMR in relation to monitoring and enforcement of the code. Fig. 2 illustrates the percent change in EBF in the countries of the EMR with engagement of health staff and health systems.

DISCUSSION

The study demonstrated that national laws that were relatively well covered by over 80% of the EMR countries were for the articles related to the scope of the code, promotion to the general public, and promotion in health facilities. The provisions that were not well covered by the countries were the informational and educational material by industry, monitoring and enforcement of the laws, engagement of HWs and HS, and labeling instructions. At the global level, 136 (70%) of 194 countries had national laws with provisions under the code. Of these, 25 countries had measures

Table 1: Scores for the provisions in the national laws that cover the international code by country income and year of legislation

| Country (13) | Year | Scope (out of 20) | Monitoring and enforcement (out of 10) | Informational and educational materials (10) | Promotion to general public (20) | Promotion in health facilities (10) | Engagement with health workers and systems (15) | Labeling (15) | Total (100) |
|-----------------------------|------|-------------------|--|--|----------------------------------|-------------------------------------|---|---------------|-------------|
| High-income countries (3) | | | | | | | | | |
| Oman | 1998 | 4 | 5 | 0 | 4 | 10 | 3 | 2 | 28 |
| Bahrain | 2018 | 20 | 8 | 9 | 17 | 0 | 0 | 4 | 58 |
| Jordan | 2015 | 8 | 3 | 2 | 20 | 10 | 5 | 1 | 49 |
| Mean | | 10.7±8.3 | 5.3±2.5 | 5.5±4.9 | 12.3±10.7 | 4.7±5.0 | 5.0±5.0 | 2.7±1.5 | |
| Middle-income countries (6) | | | | | | | | | |
| Tunisia | 1983 | 16 | 8 | 0 | 20 | 10 | 4 | 6 | 64 |
| Syria AR | 2000 | 8 | 8 | 4 | 20 | 10 | 8 | 6 | 64 |
| Iran | 2010 | 10 | 8 | 4 | 9 | 0 | 4 | 0 | 35 |
| Palestine | 2012 | 20 | 8 | 9 | 20 | 10 | 15 | 10 | 92 |
| Iraq | 2015 | 14 | 0 | 4 | 0 | 10 | 2 | 7 | 37 |
| Egypt | 2018 | 16 | 0 | 8 | 10 | 0 | 0 | 2 | 36 |
| Mean±SD | | 14.0±4.4 | 5.3±4.1 | 4.8±3.2 | 13.2±8.2 | 6.7±5.2 | 5.5±5.4 | 5.2±3.6 | |
| Low-income countries (4) | | | | | | | | | |
| Yemen | 2002 | 16 | 5 | 1 | 17 | 10 | 4 | 6 | 59 |
| Afghanistan | 2009 | 14 | 10 | 10 | 17 | 10 | 14 | 14 | 89 |
| Djibouti | 2010 | 10 | 5 | 0 | 20 | 10 | 7 | 0 | 52 |
| Pakistan | 2012 | 16 | 5 | 6 | 20 | 10 | 10 | 6 | 73 |
| Mean±SD | | 14±2.8 | 6.25±2.5 | 4.25±4.6 | 18.5±1.7 | 10 | 8.75±4.3 | 5.7±2.9 | |

AR: Arab Republic; Source of data: WHO/UNICEF/IBFAN, 2020

substantially aligned with the code; 42 MS had measures which are moderately aligned; 69 had only included some provisions; and 58 did not have any legal measures [5]. This calls for action in relation to strengthening of the legislative laws related to these provisions.

The percent increase in EBF or CBF rates before 2005 did not differ from those between 2005 up to 2014 and those calculated in the third period, that is, percent increase in EBF and CBF for the most recent survey with the previous survey. EBF rates were highest in Afghanistan (57.5%) with a positive trend and lowest in Djibouti (4.7%) and Somalia (9%), all of which are LIC. Seven countries showed negative trends in EBF (46.7%) while 8 showed positive trends (53.3%). CBF for 1 year, on the other hand, showed an overall tendency for negative trends overtime with no significant differences between the mean values of the groups, $p > 0.05$.

The overall EBF for the EMR countries is estimated to be 41% [20] which is similar to the global estimated rates of EBF at 40% [21]. Data from 440 surveys of 140 countries in 2010 showed that EBF trends in developing countries increased from 33% in 1995 to 39% in 2010. Studies have shown that EBF appeared to increase in developing countries with the biggest improvement in West and Central Africa from 1990 to 2010 [22]. However, in Africa, trends in EBF have decreased in 2017 to 37% [23]. Still, progress in EBF rates is far below that targeted by the WHO's nutrition target of 50% [21]. In the USA, EBF is 6% [21]. At subnational level, estimates were far below this target and only 23 countries worldwide have achieved 60% EBF rates [21].

In relation to income group, the majority of countries that had at least two breastfeeding point estimates over the entire period and laws covering the code came from MIC 6 (46.1%), 4 from LIC (30.7%), and 3 from HIC (23.07%). There was an evident association of the total score for the national laws with the recent trends in EBF. On the whole, the national laws were above 75% in only 2 of the 13 countries. Furthermore, EBF was below 40% in 11 out of the 13 countries and trends for EBF declined in the recent years in 7 countries shown in this study. Partial implementation, that is, presence of some provisions in country laws, was associated with short-term improvements in EBF followed by a decline in EBF. Globally, trends in EBF are explained by weak or absent provisions in the national laws that enact the code [24].

The provisions for the Scope of the Code were not associated with changing trends in EBF and CBF score on scope. The issue with the "Scope of the Code" is that enforcement of the age limit and inclusion of the provisions for foods and beverages within the scope for up to 36 months of age has not been adopted by many MS. Scope is an important issue, especially when it goes beyond 6 months and well into 36 months to cover foods and beverages promoted for use by infants and young children [6]. This is particularly important not only to protect breastfeeding but also to prevent under and overnutrition which lead to wasting or obesity, respectively. This has been shown by a report that compared China and India. Whereas the Indian Code restricts marketing up to the age of two years, the Chinese Code applies only to infants under 6 months of age. India has a functioning

Table 2: Trends of exclusive and CBF rates categorized from 1990 to 1999 and 5 yearly thereafter up to 2019

| Country (15) | % EBF 1990–1999 | % EBF 2000–2004 | Percent change 1990–2004 | % EBF 2005–2009 | % EBF 2010–2014 | Percent change 2005–2014 | Previous national survey | Last national survey* | Percent change previous survey and last survey |
|---------------|--------------------|--------------------|--------------------------------|--------------------|--------------------|--------------------------------|--------------------------------|-----------------------------|--|
| Afghanistan | 38.6 | 43.1 | 11.7 | - | - | - | 43.1 | 57.5 | 33.4 |
| Bahrain | 33.8 | 37.4 | 10.7 | 64.1 | 59.7 | -13.7 | 59.7 | 55.3* | -7.3 |
| Djibouti | 1.3 | 8 | 515.4 | 6.7 | 4.7 | -29.85 | 6.7 | 4.7 | -29.85 |
| Egypt EBF | 57 | 30.3 | -46.8 | 38.3 | 53.2 | 38.9 | 53.2 | 39.7 | -25.3 |
| CBF | 80.8 | 83.0 | 2.7 | 86.4 | 80.0 | -7.4 | 86.4 | 80.0 | -7.4 |
| Iran | - | 44.1 | - | - | 53.1 | - | 44.1 | 53.1 | -20.4 |
| Iraq EBF | 12.3 | - | - | 25.1 | - | - | 25.1 | 19.6* | -21.9 |
| CBF | - | 58.6 | 15.4 | 67.6 | - | -33.7 | 67.6 | 44.8 | -33.7 |
| Jordan EBF | 10.9 | 26.3 | 141.3 | 21.8 | 22.7 | 4.1 | 22.7 | 25.4* | 11.9 |
| CBF | 43.9 | 51.1 | 16.4 | 46 | 43.5 | -21.3 | 46 | 36.2 | -21.3 |
| CBF | | | | | | | | | |
| Oman EBF | - | 33.8 | - | - | 23.2 | - | 33.8 | 23.2 | -31.4 |
| CBF | - | 95 | - | 72.2 | 80 | 10.8 | 72.2 | 80 | 10.8 |
| Pakistan EBF | 19 | - | - | 37 | 37.7 | 1.9 | 37.7 | 47.5* | 25.9 |
| CBF | 88 | 78.3 | 11.02 | 80.6 | 69.6 | -13.7 | 69.6 | 48 | -13.6 |
| Palestine EBF | - | 37.1 | - | - | 28.7 | - | 28.7 | 38.6* | 34.5 |
| CBF | - | - | - | 60.0 | 54.4 | 2.76 | 60.0 | 52.9 | -11.8 |
| Syria AR EBF | | 28.5 | | 41.1 | | | 28.5 | 42.6 | 49.5 |
| CBF | 59.6 | - | - | 63.9 | 55.8 | -12.7 | 63.9 | 55.8 | -12.7 |
| Tunisia EBF | 18 | - | - | 6.2 | 8.5 | 37.1 | 8.5 | 13.5 | 58.8 |
| CBF | - | 59.1 | - | 48.1 | 49.2 | -8.1 | 48.1 | 45.2 | -6.02 |
| Yemen | 17.8 | - | - | 11.5 | 9.7 | -15.65 | 11.5 | 9.7 | -15.65 |
| Morocco EBF | 54.5 | 24.8 | -54.5 | 31 | 27.8 | -10.3 | 27.8 | 54.5* | 96 |
| CBF | 56.9 | 56.5 | 0.7 | 66.5 | 64.9 | -2.4 | 66.5 | 64.9 | -2.4 |
| Somalia EBF | 9.0 | - | - | 9.1 | 5.3 | -41.8 | 5.3 | 9.0* | 69.8 |
| CBF | - | 26.6 | - | 50.2 | 60.8 | 21.1 | 50.2 | 60.8 | 21.1 |
| Yemen CBF | 63.7 | 64.5 | 6.7 | - | 71.2 | 10.4 | 64.5 | 71.2 | 10.4 |

AR: Arab Republic; CBF: Continued breastfeeding; EBF: Exclusive breastfeeding

Table 3: Correlation of percent change in exclusive and CBF, duration of national code, and scores for provisions under code of legal measures

| Scores for national Laws | Scope | Monitoring and enforcement | Informational and educational | Promotion to general public | Promotion in health facility | Engagement of health workers | Labeling | Total scores for each country |
|---------------------------|--------|----------------------------------|-------------------------------------|-----------------------------------|---------------------------------|------------------------------------|----------|-------------------------------------|
| No | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| % change EBF [#] | r0.3 | r0.6* | r0.3 | r0.6* | r0.3 | r0.6* | r0.6* | r0.8** |
| p-value | 0.37 | 0.025 | 0.316 | 0.023 | 0.321.331 | 0.05 | 0.04 | 0.001 |
| No | 9 | 9 | 8 | 9 | 9 | 9 | 9 | 9 |
| % change CBF [#] | r0.6 | r0.07 | r0.3 | r-0.25 | r-0.2 | r-0.5 | r0.08 | r-0.2 |
| p-value | 0.09 | 0.86 | 0.37 | 0.55 | 0.54 | 0.19 | 0.85 | 0.65 |
| ^Duration of national law | r-0.17 | r0.8* | r-0.5 | r0.2 | r0.2 | r0.38 | r0.2 | r0.06 |
| p-value | 0.67 | 0.015 | 0.18 | 0.625 | 0.635 | 0.32 | 0.66 | 0.89 |

*Correlation is significant at the 0.05 level (two tailed);**correlation is significant at the 0.01 level (two tailed); [#]EBF: Exclusive breastfeeding; CBF: Continued breastfeeding; correlations with percent change after 2010. ^Duration of national code

code for implementation and monitoring mechanism, whereas China does not. The report found significant differences in EBF between both countries: EBF was 46% in India versus 28% in China and CBF beyond 12 months was 88% in India versus 37% in China [25]. However, the study could not ascertain trends in EBF [25]. In the USA [26], EBF rates through the first 6 months

of life are 25.6% for infants born in 2017 and those who continue breastfeeding at 1 year are 35.3%. The US with highest rates of EBF is in Minnesota (38.7%) and CBF at 1 year, in Hawaii (55%) [26].

Provisions in the national laws that cover monitoring and enforcement were associated with change in EBF (r0.6) and

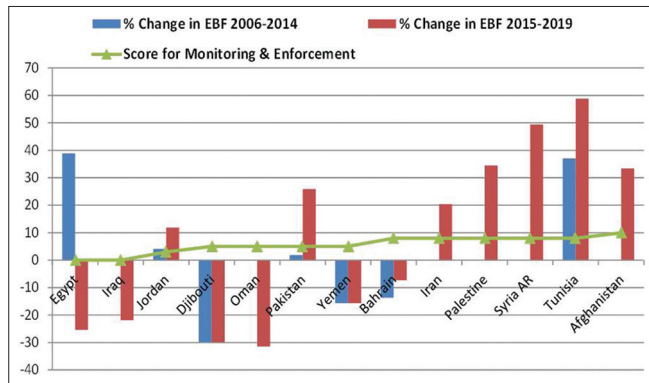


Figure 1: Percent change in exclusive breastfeeding from 2005 to 2014 and >2015 in relation to the strength of the score for provisions in national laws on monitoring and enforcement under the code

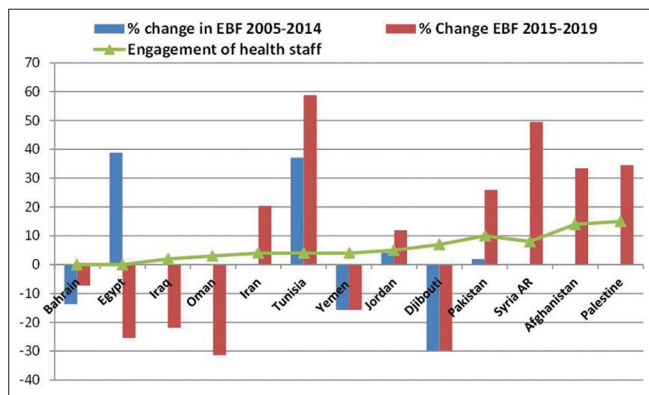


Figure 2: Percent change in exclusive breastfeeding from 2005 to 2014 and 2015–2019 and score for provisions in national laws on engagement of health staff and health systems under the code

with the duration of the national code but not with CBF. Only two out of seven countries that had scores over 50% showed a positive trend for CBF in the more recent period (after 2005). Globally, only 73 countries have measures which clearly spell out the responsible body in the government for monitoring and compliance, and only 82 define sanctions for violations [5]. Therefore, legal measures must include clear provisions which enable and empower authorized agencies to take the corrective action needed. EBF needs to be supported by optimal monitoring and enforcement laws that are binding and deterrent. Monitoring and enforcement provisions require the presence of a responsible body for monitoring and the presence of effective sanctions and penalties.

Provisions in the national laws for informational and education material on infant feeding from industry were highest in five countries for EBF. The EBF trends were positive in the more recent years in three countries and negative in two. While the reported rates of CBF at 12 months of age for the EMR countries under study showed declining trends throughout the past 3 decades in all the countries except in Somalia, Oman and Yemen that demonstrated a slight increase of around 10% between the last two surveys. Such findings are probably related to the fact that the laws in these countries were not implemented except late. In the global survey, none of the countries received full points on this provision [5]. Informational and educational material by

manufacturers and distributors of products under the code can have a powerful effect on influencing mother's decision to breastfeed and to give optimal complementary foods. Making bottle feeding a practice linked with modernity and easy child care, women independence, sleep, and rest at night and good appearance misguides women's decision to breastfeed [27]. Evidence has shown that breastfeeding prevents obesity by helping the woman to regain her pre-pregnancy weight through burning more calories and is healthier to the mother as it prevents breast and ovarian cancer, type 2 diabetes, hypertension, and cardiovascular disease and would thereby prevent over 2000 women deaths annually in the USA from these conditions and the high economic cost of treating these conditions [28]. For instance, information by industry misleads mothers by encouraging replacement feeds in the evening and omitting night feeds "to allow mothers to have a restful night nap." While contrary to this, studies have shown that night feeding is beneficial for both the baby and the mother [29,30,31] and that giving one bottle at nighttime can disrupt and decrease breastfeeding, increase the infant's risk of exposure to allergies and diabetes mellitus later in life [32]. In addition, none of the information and education from industry cover the risks of not breastfeeding in their education material to mothers and the public or possible contamination by fatal pathogens [5].

Legal measures with provisions that cover promotion to the general public appear to be high; as 9 out of 12 (75%) had high scores and associated with trends in EBF in the recent years. Furthermore, trends in EBF increased in 57.1% in the early years and climbed up to 71.2% in the later years. This shows that the strength of the laws may be an important drive in promoting and sustaining EBF trends in the region and should be adopted within the context of the sustainable development goals for 2030.

The promotion of breast milk substitutes (BMSs) is aggressively and tactically directed to mothers and pregnant women through mass media, printed advertisements either directly or indirectly through incentives given to HWs, health facilities, retailers, and policy-makers [17]. Internet marketing through company sites and social media has become very popular and cost effective for these companies [33,34]. Television advertisements were found to be associated with 75% reduction of EBF in Thai. Thus, legislative action to restrict MBMS when not enforced properly can support counter promotion and result in backsliding in EBF [35].

Promotion in HF and engagement of HW and HS were associated with recent trends in EBF but not with CBF. The engagement of HW and HS is one of the prime targets for companies marketing products under the scope of the code. HWs and HS are unknowingly driven to prescribe and promote the products of these companies to repay them for sponsoring their scientific events. This interferes with their professional obligation to protect their clients and their professional oath of "Do NO Harm" [36]. Health professionals should be made aware that these practices represent a conflict of interest in their profession and they should not be trapped into them as

the WHA58.32 resolution urges MS “to ensure that financial support and other incentives for programs and health professionals working in infant and young child health do not create conflicts of interest” [36]. Furthermore, the WHA69.9 urges MS, manufacturers and distributors, HW, and the media to implement the WHO guidance on ending the inappropriate promotion of foods for infants and young children [6], still marketing drives the consumption of commercial foods fed to young infants, especially in LIC and MIC [37], where malnutrition is prevalent.

The global survey of the WHO found that of the 136 countries with legal measures in place, a total of 79 have an overall prohibition on the use of health facilities for promotion and 30 have measures that call for a full prohibition of all gifts or incentives to HW [5]. When company representatives give gifts or incentives to HWs, they create a sense of obligation to them that can influence the judgment or attitudes of HWs toward their products. According to the code, HWs have a moral obligation not to accept gifts and other incentives from these companies. Research has shown that in-hospital formula use increases early breastfeeding cessation among the 1st time mothers intending to breastfeed [38]. In the USA, 19.2% are fed milk formula (MF) in the first 2 days of life and this has increased from 16.9% in 2016 [21]. This has been emphasized in the revised 10 steps of the BFHI [39].

Other studies have shown that countries adopting legislations for the code provisions have demonstrated an overall increase in breastfeeding rates related to the timing of enacting of the code which coincides with the findings in the current study [40,41]. On the other hand, exposure to formula marketing has been associated with a decrease in EBF. A study by Zhang *et al.* [42] showed that mothers exposed to online or print formula are more likely to offer these products to their infants. The distribution of formula samples in hospitals was associated with a decrease in EBF [43].

Information on labels when incomplete can be a source of misinformation to mothers. Our study showed strong associations between trends in EBF and scores given to provisions in the national laws regarding labeling. Labeling information needs to warn mothers about the hazards of inappropriate preparation and the presence of pathogenic bacteria in some cases in the products. This is not mentioned in most of the national laws and hence none of this information exists on the labels of the products promoted under the scope of the code. The laws for the code do not prohibit MF use, but prohibit their marketing, especially when information reaching mothers is incomplete and does not include warnings of the hazards of inappropriate use of these products and their potential risks.

Literature review studies show that the global sale of BMS has increased from 2 billion to 40 billion US\$ over the past 30 years [17]. Growth in infant MF industry accounts for two-thirds of all baby food sales. The rate of growth sales of these products increased by 10% on annual basis in many low and middle countries, but is stagnant in the HIC [17]. The global MF market is valued at 27,700 million USD in 2018 and is expected

to increase to 35,000 million USD by the end of 2025, growing at a rate of 3.0% during 2019-2025 [44].

A study on the consumption of MF [25] reports that the biggest market for MF is the follow-up formula and this explains the low and decreasing CBF rates which are not supported by strong legislative provisions. Moreover the world, total MF sales have grown in 2008–2013 by 40.8% from 5.5 to 7.8 kg per infant/child/year. They report that sales volume per infant/child is positively associated with country income level being mostly high in the high- and high-middle-income groups, which can explain the declining trends in these countries in the EMR. The global total MF sales value was \$US 44.8 billion in 2014 to \$US 70.6 billion in 2019 of which 10% (around 5 billion) is spent on marketing.

Study Limitations

The small number of countries with serial estimates of EBF and CBF is one of the limitations and the study findings represent a pilot and can be reinforced with a larger study. Differences between LIC, MIC, and HIC were difficult to identify, again due to the small number of countries in HIC and LIC. The confounding effect of illiteracy prevailing in many of these countries and especially media literacy was not taken into consideration and could have explained the variations between countries in the EBF and CBF trends and their relationships with the score given to national laws.

CONCLUSION

This research highlights the power of the code when implemented in its entirety in national laws for the control of MBMS in raising EBF rates. There was an association between the score given to the national laws for provisions under the code and the recent trends in EBF. Marketing, when uncontrolled, is probably the leading drive behind the declines or improvements in EBF MS in the EMR. National laws that have high scores for monitoring and enforcement and engagement of HWs and HS can have positive effects on infant feeding trends.

RECOMMENDATIONS

Promotion of EBF in the first 6 months of life and CBF for 2 years or more, adequate complementary feeding, and feeding young children under-five need to be protected from uncontrolled marketing of milk products and foods that replace breastfeeding and the natural foods children of their age. MS should make legislators and policy-makers aware of the importance of protecting breastfeeding by covering the code in its entirety and continuous monitoring using the NetCode tool kit of IBFAN [45,46]. MS need to strengthen their legal and regulatory frameworks of enforcement through powerful sanctions for violations to provisions under the national code. Sanctions and penalties should be binding and deterrent. The general public needs to be made aware of these laws by encouraged to report

violations to the code and place pressure on health professionals and health systems to implement them and protect themselves and their children's rights to breastfeeding.

REFERENCES

- World Health Organization. International Code of Marketing of Breast-milk Substitutes. Geneva: World Health Organization; 1981.
- INFACT Infant Feeding Coalition, Canada. Summary of WHA Resolution Relevant to the Code. Canada: IBFAN-International Code Documentation Centre, Pnang; 2018.
- World Health Organization. The International Code of Marketing of Breast-milk Substitutes-2017 Update: Frequently Asked Questions. Geneva: World Health Organization; 2017.
- WHO, UNICEF. NetCode Toolkit. Monitoring the Marketing of Breast-milk Substitutes: Protocol for Ongoing Monitoring Systems. Geneva: WHO; 2017. Available from: <https://www.who.int/nutrition/netcode/toolkit/en>. [Last accessed on 2020 May 01].
- WHO/UNICEF/IBFAN. Marketing of Breast-milk Substitutes: National Implementation of the International Code, Status Report 2020. Geneva: World Health Organization; 2020.
- WHO. Guidance on Ending the Inappropriate Promotion of Foods for Infants and Young Children: Implementation Manual. Geneva: WHO; 2017. Available from: <https://www.apps.who.int/iris/bitstream/handle/10665/260137/9789241513470-eng.pdf?sequence=1>. [Last accessed on 2020 May 01].
- Al-Jawaldeh A, Abul-Fadl A, Sayed G. Communication strategies for strengthening promoting breastfeeding in countries in conflict. *Int J Hum Soc Sci* 2018;6:233-40.
- World Health Organization. The Optimal Duration of Exclusive Breastfeeding. Report of an Expert Consultation Geneva, Switzerland. Geneva: World Health Organization; 2011 WHO/NHD01.09, WHO/FCH/CAH/01.24. Available from: http://www.apps.who.int/iris/bitstream/10665/67219/1/WHO_NHD_01.09.pdf?ua=1. [Last accessed on 2018 Mar 07].
- World Health Organization, United Nations Children's Fund. Global Strategy for Infant and Young Child Feeding. Geneva: World Health Organization; 2003. Available from: <http://www.apps.who.int/iris/bitstream/10665/42590/1/9241562218.pdf>. [Last accessed on 2018 Mar 07].
- Victoria CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, *et al.* Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *Lancet* 2016;387:475-90.
- Soldavini J, Taillie LS. Recommendations for adopting the international code of marketing of breast-milk substitutes in United States policy. *J Hum Lact* 2017;33:582-7.
- Al-Jawaldeh A, Abul-Fadl A. Malnutrition, mortality and breastfeeding practices in the Eastern Mediterranean region: A review of the current status. *J Pediatr Care* 2018;4:1.
- NEOVITA Study Group. Timing of initiation, patterns of breastfeeding, and infant survival: Prospective analysis of pooled data from three randomised trials. *Lancet Glob Health* 2016;4:e266-75.
- Onema S. By 2030, end all forms of malnutrition and leave no one behind. UNISCN. Rome Italy: United Nations System Standing Committee on Nutrition. Discussion Paper; 2018. p. 1-32. Available from: <http://www.unscn.org>. [Last accessed on 2021 Feb 07].
- World Health Organization. Global Nutrition Targets 2025: Policy Brief Series (WHO/NMH/NHD/14.2). Geneva: World Health organization; 2014.
- United Nations Children's Fund, World Health Organization, 1000 Days, Alive and Thrive. Nurturing the health and wealth of nations: The investment case for Breastfeeding. New York, Geneva: United Nations Children's Fund and World Health Organization; 2017.
- Piwoz E, Huffmann S. The impact of marketing of breast-milk substitutes on WHO-recommended breastfeeding practices. *Food Nutr Bull* 2015;36:373-86.
- Global UNICEF Global Databases: Infant and Young Child Feeding: Exclusive Breastfeeding, Predominant Breastfeeding. New York: UNICEF; 2019.
- United Nations Children's Fund, Division of Data Research and Policy. Global UNICEF Global Databases: Infant and Young Child Feeding: Continued Breastfeeding. New York: United Nations Children's Fund, Division of Data Research and Policy; 2019.
- Al-Jawaldeh A, Doggui R, Borghi E, Aguenau H, Ammari LE, Abul-Fadl A, *et al.* Tackling childhood stunting in the Eastern Mediterranean region in the context of COVID-19. *Children* 2020;7:239.
- UNICEF and WHO. Global Breastfeeding Scorecard. Tracking Progress for Breastfeeding Policies and Programmes. Geneva: UNICEF and WHO; 2017.
- Cai X, Wardlaw T, Brown DW. Global trends in exclusive breastfeeding. *Int Breastfeed J* 2012;7:12.
- Bhattacharjee NV, Schaeffer LE, Marczak LB. Mapping exclusive breastfeeding in Africa between 2000 and 2017. *Nat Med* 2019;25:1205-12.
- Sobel HL, Iellamo A, Raya RR, Padilla AA, Olive JM, Nyunt US. Is unimpeded marketing for breast milk substitutes responsible for the decline in breastfeeding in the Philippines? An exploratory survey and focus group analysis. *Soc Sci Med* 2011;73:1445-8.
- Baker P, Smith J, Salmon L, Friel S, Kent G, Iellamo A, *et al.* Global trends and patterns of commercial milk-based formula sales: Is an unprecedented infant and young child feeding transition underway? *Public Health Nutr* 2016;2016:1-11.
- Breastfeeding Report Card, United States. Centers of Disease Control and Prevention (CDC). United States: National Center for Chronic Disease Prevention and Health Promotion; 2020.
- Smith J, Blake M. Infant food marketing strategies undermine effective regulation of breast-milk substitutes: Trends in print advertising in Australia, 1950-2010. *Aust N Z J Public Health* 2013;37:337-44.
- Louis-Jacques A, Stuebe A. Long term maternal benefits of breastfeeding. *Contemporary OB Gyn J* 2018;64:26-9.
- Doan T, Gay CL, Kennedy HP, Newman J, Lee KA. Nighttime breastfeeding behaviour is associated with more nocturnal sleep among first time mothers at one month postpartum. *J Clin Sleep Med* 2014;10:313-9.
- Cohen EA, Hadash A, Shehaden N, Pillar G. Breastfeeding may improve nocturnal sleep and reduce infantile colic: Potential role of breast milk melatonin. *Eur J Pediatr* 2012;171:729-32.
- Montgomery-Downs HE, Clawges HM, Santy EE. Infant feeding methods and maternal sleep and daytime functioning. *Pediatrics* 2010;126:e1562-8.
- Stuebe A. The risks of not breastfeeding for mothers and infants. *Rev Obstet Gynecol* 2009;2:222-31.
- Abraham SW. Milk and social media: Online communities and international code of marketing of breast-milk substitutes. *J Hum Lact* 2012;28:400-6.
- Foss KA, Southwell BG. Infant feeding and media: The relationship between parent management magazine content and breastfeeding, 1972-2000. *Int Breastfeed J* 2006;1:10.
- Phouththakeo P, Ostsuke K, Ito C. Cross border promotion of formula milk to Laos people's democratic republic. *J Pediatr Child Health* 2014;50:51-6.
- Grummer-Strawn LM, Holliday F, Jungo KT. Sponsorship of national and regional professional pediatrics associations by companies that make breast-milk substitutes: Evidence from a review of official websites. *BMJ Open* 2019;9:e029035.
- Zehner E, Champenym M. Marketing and consumption of commercial foods fed to young children in low and middle-income countries. *Mater Child Nutr* 2019;15:S4.
- Chanry CJ, Dewey KG, Peerson JM, Wagner EA, Nommsen-Rivers LA. In-hospital formula use increases early breastfeeding cessation among first-time mothers intending to exclusively breastfeed. *J Pediatr* 2014;164:1339-45.
- World Health Organization. Implementation Guidance: Protecting, Promoting and Supporting Breastfeeding in Facilities Providing Maternity and Newborn Services-the Revised Baby-friendly Hospital Initiative. Geneva: World Health Organization; 2018.
- Barennes H, Slesak G, Goyet S, Aarom P, Srour LM. Enforcing the international code of breastmilk substitutes for better promotion of exclusive breastfeeding: Can lessons be learned? *J Human Lact* 2015;32:20-7.
- McFadden A, Kenny-Muir N, Whiteford H, Refrew MJ. Breastfeeding Policy Matters: Identifying Strategies to Effectively Influence Political Commitment to Breastfeeding. A Review of Six Country Case Studies. London, England: Save the Children; 2015.
- Zhang Y, Carlton E, Fein SB. The association of prenatal media marketing

- exposure recall with breastfeeding intentions initiation and duration. *J Human Lact* 2013;29:500-9.
43. Rosenberg KD, Stull JD, Adler MR, Kasehagen LJ, Crivelli-Kovach A. Impact of hospital policies on breastfeeding outcomes. *Am J Public Health* 2008;98:290-5.
 44. Global Infant Formula Milk Powder Market. Worldwide Overview By Industry Size, Market Share, Future Trends, Growth Factors and Leading Players Research Report Analysis and Forecast 2025-360 Market Updates. Pune: Global Infant Formula Milk Powder Market; 2020.
 45. Kent G. Global infant formula: Monitoring and regulating impacts to protect human health. *Int Breastfeed J* 2015;10:6.
 46. Save the Children. Breastfeeding: Policy Matters. Identifying Strategies to

Effectively Influence Political Commitment to Breastfeeding: A Review of Six Country Cases. London: Save the Children; 2020.

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