

Nourishing care for early child development in Eastern Mediterranean region through early child nutrition: A case studies from six countries

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ABSTRACT

Background: An optimum brain development requires a stimulating environment, adequate nutrients, and social interaction but is challenged by poverty and illiteracy. **Aim:** This study aims to assess the status of early child education (ECE) and child development (ECD) in relation to early feeding practices. **Materials and Methods:** The global data for ECE and ECD were obtained from the demographic health surveys. Breastfeeding practices, early intake of iron, and Vitamin A through foods versus supplements were studied in relation to ECE and ECD in the 31 provinces of six countries by socioeconomic status. ECE, stimulation, and care were studied for 16 countries in the region. Descriptive statistics and Pearson's correlation were used for analysis with a cutoff of $p < 0.05$. **Results:** Attendance in ECE and responsive care by father were highest in middle-income countries (28.4 ± 19.25 and 45.125 ± 25.4), early stimulation by responsive adult was highest in higher income (87 ± 4.5), and learning materials at home and inadequate supervision at home were highest in lower-income countries. All domains of ECD correlated with attendance in ECE at $p < 0.01$. Early stimulation and responsive care by adults were highly correlated with literacy and numeracy. There were significant correlations between exclusive breastfeeding for 6 months and attendance of ECE ($p < 0.05$), early stimulation and responsive care by adults ($p < 0.01$), and learning material ($p < 0.01$). ECD domains were inversely associated with poverty and illiteracy. ECD index correlated significantly with the intake of iron and Vitamin A from fresh foods ($p < 0.05$) but not from medicinal supplements ($p > 0.05$). **Conclusion:** Early breastfeeding practices reinforce ECE which promotes ECD. Promoting early and continued breastfeeding is necessary for achieving nurturing care framework in developing countries.

Key words: Child development, Learning, Socioemotional, Cognition, Breastfeeding, Prolacteals, Vitamin A, Iron supplements, Early child education

Early childhood, which spans up to the age of 8 years, is critical for cognitive, social, emotional, and physical development. Optimal brain development requires a stimulating environment, adequate nutrients, and social interaction with attentive caregivers [1]. The convention on the rights of the child and the sustainable development goals (SDGs) acknowledge that parenting has one of the strongest influences on children, particularly, during their early childhood years. Early life experiences form the foundation for brain architecture and a major component in this process is the interaction between children with their parents or caregivers [2]. However, early childhood development (ECD) is essential for attaining many of the SDGs, which is why the nurturing care framework (NCF) is an essential part of the SDGs [3]. The Global Strategy for Women's, Children's and Adolescents' Health has distilled 17 SDG targets, around its three themes, namely, survive, thrive, and transform [3]. This subset of targets is associated with the actions necessary to put the NCF into practice.

The NCF highlights five SDG targets as examples to guide national programming and investment in support of nurturing care [3]. These include ensuring all children to have access to quality ECD, care, and pre-primary education so that they are ready for primary education (Goal 4, target 4.2), while emphasizing ending abuse, exploitation, trafficking, and all forms of violence against and torture of children (Goal 16, target 16.2). ECD can be enhanced by early child education (ECE) through a stimulating environment by both the mother and father in continuity with the home and school environment [2].

Early infant feeding practices and interactions between mother and child are expected to influence ECE and ECD [5]. However, the links between nutrition and ECD, ECE, and NCF need to be studied in different situations of poverty and maternal illiteracy that characterize low-income countries (LICs) and middle-income countries (MICs) [4]. This may be challenging for countries of the Eastern Mediterranean region (EMR) that is exposed to chronic emergencies and conflicts. Hence, the aim of this study was to

highlight possible associations between early feeding practices and ECD and ECE in the EMR countries.

MATERIALS AND METHODS

The data for the domains of ECD and ECE, stimulation and care, as well as early infant feeding practices for children under-5 years of age were obtained from Demographic and Health Surveys (DHS) and the United Nations Emergency Fund (UNICEF) Multiple Indicator Cluster Survey (MICS). The study was conducted over a period of 6 months from September 2019 to March 2020.

The study was conducted in two phases:

Phase I: An in-depth analysis was conducted by studying data from the mean scores (in percentages) for populations of the provinces of six countries. The source of data was DHS and MICS for Jordan (DHS, 2018) (12 provinces), Oman (MICS, 2014) (nationals and non-nationals), Qatar (MICS, 2012) (nationals and non-nationals), Pakistan (Balochistan) (MICS, 2010) (5 provinces), Northeast zone of Somalia (MICS, 2011) (3 provinces), Somaliland of Somalia (MCS, 2011) (5 provinces), and Tunisia (MICS, 2012) (9 provinces). The references for the global data for the different surveys are listed in the section of the references [6-29].

Phase II: EMR countries were categorized by socioeconomic status (SES). Countries included by income were as follows: High-income countries (HICs) included Jordan, Oman, and Qatar (no data in ECD are available for Bahrain, Kuwait, Saudi Arabia, and United Arab Emirates). MICs included Egypt, Iran, Iraq, Lebanon, Morocco, State of Palestine, Syria, and Tunisia (no data are available for Libya). LICs included Afghanistan, Djibouti, Somalia, Sudan, and Yemen.

The inclusion criteria of countries under study included affiliation to the EMR according to the World Health Organization (WHO) classification, having some or all data that were pertaining to ECE, ECD, and infant feeding; most recent national survey conducted in the country under study and consistency in the methodology between the surveys with regard to definitions and interpretations. The data collected were presented in relation to SES for all the EMR countries with available data. The data included:

1. Profiles for ECE: The fields studied included attendance in ECE (2010–2018), early stimulation and responsive care by adults (2010–2018), responsive care by father, learning materials at home (books and playthings), and children with inadequate supervision
2. ECD is defined as an orderly, predictable process along a continuous path, in which a child learns to handle more complicated levels of moving, thinking, speaking, feeling, and relating to others. The domains of ECD under study included physical growth, literacy and numeracy skills, socioemotional development, and readiness to learn. Based on these domains, the early child development index (ECDI) was calculated.

The detailed analysis of ECD was conducted using a 10-item module that has been developed for the MICS program to

calculate the ECDI. Each of the 10 items is used in one of the four domains, to determine if children are developmentally on track in that domain. The domains are:

- a. Literacy-numeracy: Children are identified as being developmentally on track based on whether they can identify/name at least 10 letters of the alphabet, whether they can read at least four simple, popular words, and whether they know the name and recognize the symbols of all numbers from 1 to 10. If at least two of these are true, then the child is considered developmentally on track
 - b. Physical: If the child can pick up a small object with two fingers, like a stick or a rock from the ground and/or the mother/caretaker does not indicate that the child is sometimes too sick to play, then the child is regarded as being developmentally on track in the physical domain
 - c. In the social-emotional domain, children are considered to be developmentally on track if two of the following are true: If the child gets along well with other children, if the child does not kick, bite, or hit other children, and if the child does not get distracted easily
 - d. Learning: If the child follows simple directions on how to do something correctly and/or when given something to do, is able to do it independently, then the child is considered to be developmentally on track in the learning domain. ECDI was then calculated as the percentage of children who are developmentally on track in at least three of these four domains.
3. Infant feeding data included early initiation of breastfeeding (EIBF) in the 1st h after birth, before 24 h of birth, and giving pre-lacteals at birth, exclusive breastfeeding (EBF) from birth to 6 months and continued breastfeeding (CBF) for 12 and 24 months. Data were obtained from the concomitant surveys from which ECD and ECE were taken for each country. Intake of micronutrients was studied only in the 12 provinces of Jordan (Jordan DHS, 2018) for iron and Vitamin A, as it was not available for other countries.

The clearance for use of the global data was not necessary as the United Nations agencies encourage countries to use the data for further analysis. Hence, no ethical committee approval logistics were needed.

Descriptive statistical analysis and Pearson's correlation studies (two-tailed correlation) were used for analysis using the SPSS version 20. The cutoff level of significance was $p < 0.05$ and $p < 0.01$ (two tailed).

RESULTS

Table 1 compares the mean and standard deviation score for the domains of ECD for children aged 36–59 months in the EMR countries under study by provinces and populations. Qatar and Oman were analyzed in accordance with national and non-nationals. The other countries as Jordan, Pakistan (represented by Balochistan), Tunisia, and Somalia were analyzed by number

of provinces. The mean score for literacy and numeracy was highest in Qatari children (60.9) and lowest in Somalian ones (16.2±2.8 in Somalia NE and 19.6±7.6 for Somaliland). The mean score for physical development was highest in Tunisia and lowest in Somalia NE. The mean score for socioemotional and learning was highest in Tunisia and lowest in Somalia, and the mean score for ECDI was highest in Qatar (83.7) and lowest in Somalia NE (35.2±1.2). The mean highest score was for the physical domain (91.2±6.5) and the lowest score was for literacy and numeracy (29.9±13.6) with a mean score for ECDI for the six countries as 63.5±13.85.

When the relationship between maternal level of education and ECD in the six countries under study was analyzed, the domain for literacy and numeracy increased with increasing level of education (Fig. 1). Socioemotional domain was higher among mothers with elementary education and high levels of education but lower in those with lower levels of education (primary and secondary). ECDI followed the same pattern of socioemotional domain of development.

There were no significant correlations between the early breastfeeding practices and developmental domains assessed in the national surveys of the six countries under study, as shown in Table 2. Literacy, numeracy, and physical domain were inversely

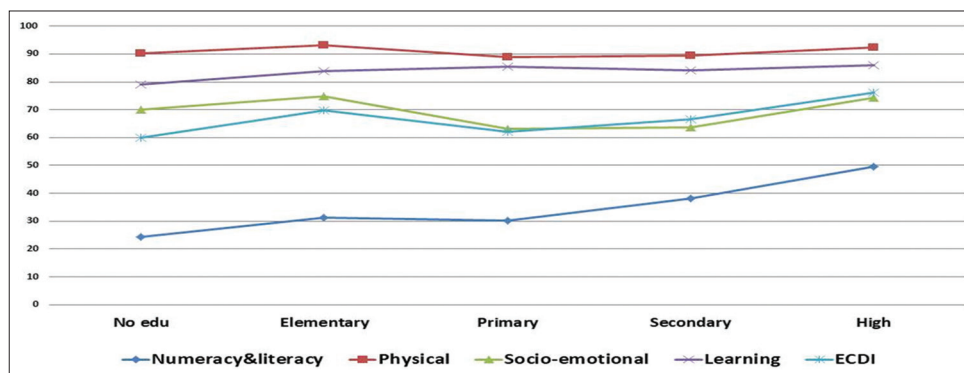


Figure 1: Relationship of mother level of education and early child development domains in the six Eastern Mediterranean region countries under study

Table 1: Comparison of the domains of ECD among children aged 36–59 months in the 38 provinces of six countries

Country and number of provinces	Literacy- numeracy	Physical	Social-emotional	Learning	ECDI
	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean ±SD
Jordan (12)	38.3±6.5	94.9±1.6	68±7.1	82.7±5.9	66.3±7.0
Pakistan, Balochistan (5)	20.6±8.6	90.3±14.6	67.3±10.8	76.4±8.4	58.4±11.6
Qatar (2)	60.9	92.1	76	87.75	83.65
Tunisia (9)	24.6±11.4	96.7±1.7	72.05±3.03	90.4±5.7	70.6±5.4
Oman (2)	40.9	93.2	70.5	84.5	71.4
Somalia NE (3)	16.2±2.8	76.1±3.8	45.7±2.6	69.2±1.3	35.2±1.2
Somaliland (5)	19.6±7.6	84.5±3.6	59.6±7.3	85.7±3.6	53.8±10.3
Mean for total (38)	29.9±13.6	91.2±6.5	66.8±10.3	83.4±8.6	63.5±13.85

ECD: Early childhood development, ECDI: Early child development index

Table 2: Correlative studies between breastfeeding practices and domains of early child development in 31 provinces of the six Eastern Mediterranean countries under study

Breastfeeding practice	Literacy-numeracy (31)	Physical (31)	Social-emotional (31)	Learning (31)	ECDI (31)
EIBF within 1 h of birth					
Pearson’s correlation	r-0.271	r-0.05	r-0.1	r-0.2	r-0.05
Sig. (two tailed)	0.141	0.8	0.6	0.4	0.8
EIBF <24 h of birth					
Pearson’s correlation	r-0.1	r-0.3	r-0.1	r-0.1	r-0.01
Sig. (two tailed)	0.6	0.09	0.6	0.5	0.9
EBF					
Pearson’s correlation	r-0.2	r-0.1	r-0.2	r-0.1	r-0.03
Sig. (two tailed)	0.3	0.5	0.4	0.5	0.9
Prelacteals					
Pearson’s correlation	r-0.2	r-0.1	r-0.35*	r-0.1	r-0.2
Sig. (two tailed)	0.3	0.4	0.03	0.6	0.2

*Correlation is significant at <0.05 level (two tailed). EIBF: Early initiation of breastfeeding; EBF: Exclusive breastfeeding, ECDI: Early child development index

correlated with partial breastfeeding (PBF) but not with other breastfeeding practices. Socioemotional domain was inversely correlated with PBF and learning with CBF at 12 months but not with other breastfeeding practices. ECDI was inversely correlated with EIBF within 1 h of birth ($r=-0.4$ at $p<0.05$) and 24 months ($r=-0.4$ at $p<0.05$) but not with other infant feeding practices.

Table 3 presents a correlation of profiles of ECD with ECE, stimulation, and supervision in the six countries of the EMR. Significant correlations were found between all four domains of development (including ECDI) and attendance in early childhood education (2010–2018). Early stimulation and responsive care by adults were highly correlated with literacy and numeracy. Learning materials at home whether playthings or books were highly correlated with literacy, numeracy, physical, socioemotional domains, and ECDI, but not with learning. There were no significant correlations between responsive care by adults or father with physical, socioemotional, and learning. There were no significant correlations between inadequate supervision and all four domains of development.

Table 4 demonstrates evident correlations between early feeding practices with ECE, stimulation, and supervision in the six countries of the EMR. There were significant correlations between EBF for 6 months and attendance of ECE, early stimulation, and responsive care by adults, and learning material used at home. EIBF was inversely correlated with attendance in early education and responsive care by father. PBF was highly correlated with playthings used as learning material and with children with inadequate supervision so did CBF at 12 months. CBF at 24 months correlated positively with attendance in early education and inadequate supervision ($p<0.05$).

Table 5 presents the correlative studies between developmental domains and intake of micronutrients of iron and vitamin through foods or through supplements in the 12 provinces of Jordan. The domain of learning was significantly associated with being fed foods rich in Vitamin A and iron. ECDI correlated with intake of foods rich in iron. There were no significant correlations between supplementation of iron or Vitamin A and any of the domains of development. Findings of ECE and stimulation for the 16 EMR countries with data are shown in Table 6 by income group.

DISCUSSION

Our study showed that progress in child development assessed by national surveys according to the DHS and MICS showed considerable variations in the fields involving socioemotional, literacy-numeracy, and learning but not for physical domains. The variations were closely linked to ECE and stimulation indices, SES of the community, and maternal level of education. The primary purpose of the ECDI is to inform public policy regarding the developmental status of children in countries under study. Numerous early researches have shown that breastfeeding is important for early child development, socially, psychologically, and intellectually through maternal infant interactions and behavior, and bonding [30-32]. There is abundant information through meta-analysis studies regarding intellectual and cognitive development, giving evidence that differences do exist between breastfed and formula fed that can formulate the future of humans, shaping cultures, and economies through the superiority of cognitive development among breastfed [33].

Table 3: Correlation of profiles of ECD with ECE, stimulation, and supervision in the 31 provinces of the six countries of the Eastern Mediterranean region

ECD	Attendance in early childhood education (2010–2018) (38)	Early stimulation and responsive care by adults (2010–2018) (38)	Responsive care by father (38)	Learning materials at home (38)		Children with inadequate supervision (38)
				Books	Playthings	
Literacy-numeracy	r0.6**	r0.7*	r0.4	r0.9**	r0.5*	r-0.15
Physical	r0.75**	r0.3	r0.17	r0.5*	r0.8**	r-0.3
Social-emotional	r0.85**	r0.3	r0.34	r0.9**	r0.7**	r-0.3
Learning	r0.75**	r-0.15	r0.3	r0.2	r-0.2	r-0.5
ECDI	r0.85**	r0.4	r0.4	r0.9**	r0.7**	r-0.2

Level of significance $p<0.01$ **, $p<0.05$ * (two tailed). ECE: Early child education, ECDI: Early child development index

Table 4: Correlation of early feeding practices with early childhood education, stimulation, and supervision in the provinces of the six countries of the EMR

ECD	Attendance in early childhood education (31)	Early stimulation and responsive care by adults (31)	Responsive care by father (31)	Learning materials at home (31)		Children with inadequate supervision (31)
				Books	Playthings	
EIBF	r-0.8	r0.1	r-0.97	r0.02	r0.15	r0.33
EBF	r0.5**	r0.7**	r0.15	r0.8**	r0.7**	r0.2
PBF	r0.12	r-0.15	r-0.4	r0.2	r0.7**	r0.9**
CBF 12 months	r0.1	r0.1	r-0.2	r0.3	r-0.04	r0.7**
CBF 24 months	r0.6	r0.2	r-0.2	r0.5	r0.4	r0.7

Level of significance, * $p<0.05$, ** $p<0.01$ (two tailed) . r: Pearson correlation coefficient. EIBF: Early initiation of breastfeeding, EBF: Exclusive breastfeeding, PBF: Partial breastfeeding, CBF 12mo: Continued breastfeeding for 12 months, CBF 24 mo: Continued breastfeeding for 24 months. EMR: Eastern Mediterranean region

Table 5: Correlations between developmental domains and intake of micronutrients of iron and vitamin through foods or through supplements in the 12 provinces of Jordan

Breastfeeding practice	Literacy	Physical	Social-emotional	Learning	ECDI
Fed foods rich in Vitamin A (12)					
Pearson's correlation	r0.1	r-0.2	r0.3	r0.6*	r0.5
Sig. (two tailed)	0.8	0.5	0.3	0.04	0.1
Fed foods rich in Fe (12)					
Pearson's correlation	r0.1	r-0.3	r0.5	r0.7*	r0.7*
Sig. (two tailed)	0.9	0.4	0.110	0.01	0.04
Supplemented with Fe (12)					
Pearson's correlation	r0.1	r-0.1	r0.5	r-0.04	r0.2
Sig. (two tailed)	0.68	0.7	0.15	0.9	0.5
Supplemented with Vitamin A (12)					
Pearson's correlation	r-0.02	r-0.1	r0.3	r0.02	r0.3
Sig. (two tailed)	0.1	0.8	0.4	0.1	0.4

*Correlation is significant at the 0.05 level (two tailed). ECDI: Early child development index

Table 6: Comparison of profiles of early childhood education, stimulation, and supervision in 16 countries of the EMR by level of income

Level of income in Mean \pm SDS	Attendance in early childhood education (2010–2018)	Early stimulation and responsive care by adults (2010–2018)	Responsive care by father	Learning materials at home		Children with inadequate supervision
				Books	Playthings	
HICs (3)	21.5 \pm 11.5	87 \pm 4.5	35.5 \pm 27.6	21 \pm 9.9	51 \pm 8.6	19 \pm 14.7
MICs (8)	28.4 \pm 19.2	54 \pm 14.6	45.1 \pm 25.4	20.5 \pm 9.9	40.6 \pm 20.6	10.8 \pm 4.1
LICs (5)	8.4 \pm 8.3	55.5 \pm 20.6	43.75 \pm 12.7	7.25 \pm 5.5	43 \pm 11.2	27.3 \pm 13.9
Total	23.3 \pm 18.3	64.85 \pm 19.3	47.7 \pm 23.3	19.1 \pm 11.75	49.6 \pm 18.7	17.4 \pm 12.3

HICs: High-income countries include Jordan, Oman, and Qatar (no data in ECD are available for Bahrain, Kuwait, Saudi Arabia, and United Arab Emirates). MICs: Middle-income countries include Egypt, Iran, Iraq, Lebanon, Morocco, State of Palestine, Syria, and Tunisia (no data are available for Libya). LICs: Low-income countries include Afghanistan, Djibouti, Somalia, Sudan, and Yemen. EMR: Eastern Mediterranean region

However, in the EMR countries, there are ongoing conflict, poverty, and unstable economies that influence nutrient intake and child health, making the nurturing effects of breastfeeding necessary to counter the effects of stress from conflict, war, food insecurities, and currently the corona (COVID-19) crises, on children's psychological development living in these circumstances.

A systemic review by Vaivada *et al.* presented systemic reviews that provided evidence for health and nutrition interventions that could influence ECD [34]. Effective interventions included food and micronutrient supplementation for mothers to reduce the risk of small for gestational age and iodine deficiency, strategies to reduce iron deficiency anemia in infancy, and early neonatal care including appropriate resuscitation, delayed cord clamping, and Kangaroo Mother Care [34].

This study found that progress in development was closely correlated with ECE and stimulation offered by an adult, especially fathers and that close supervision and interactions with the child using books and play things promoted child's development. However, ECE and early stimulation were lower in LIC, while responsive care by father was higher in MIC and LIC. Attendance in early education positively influenced all domains of development and thereby ECDI. Books and playthings influenced all domains positively and were means for encouraging parents to interact and play with their child and enhance their development.

Early stimulation by responsive parent influenced only literacy and numeracy, supporting the concept of home and online schooling with the advent of the lockdown for COVID-19.

This study showed that CBF for 12 months supported early stimulation although the results were not statistically significant. However, findings from other studies showed a strong direct relationship between duration of breastfeeding and child development [35]. Furthermore, maternal care and interaction with the child were found to play an important role on child's psychological status. In a study of a homogeneous (similar age, SES, and education) population, where mothers had a favorable environment and most infants were breastfed, the duration of breastfeeding clearly made a difference in cognitive development at 13 months and 5 years [35]. Horwood *et al.*'s long-range study reported that when children were followed from birth to 18 years or till the completion of high school, it was observed that breastfed children were more cooperative and socially better students. When dropout rates were calculated, the rate was higher among children who had been bottle-fed and lowest among those who had been breastfed equal to or longer than 8 months, even when data were adjusted for maternal demographic status [36].

The difference between our findings and the previous workers is related to the high levels of illiteracy and poverty in our region that was found to correlate positively with child education and stimulation and thereby influences child development. However,

when mothers and children are living under favorable and stable conditions, it was reported that the longer duration of breastfeeding made a difference in cognitive development at 13 months and 5 years resulting in higher developmental scores [35]. Moreover, when children who were breastfed longer than 4 months were assessed at age 15–18 years, they were found to demonstrate higher levels of parental attachment. They also perceived their mothers as being more caring and less overprotective of them compared to their bottle-fed peers. The authors concluded that extended breastfeeding is not associated with mental health risks, but breastfeeding can result in a closer parent-child relationship and thereby better social and psychological development [37].

Breastfeeding allows an infant to reach his/her full potential [30]. In a meta-analysis of 20 studies, after adjustment for maternal age, education, race, ethnicity, SES status, family size, and childhood experiences, breastfeeding was observed to be associated with significantly higher scores for cognitive development than formula feeding. A difference of 3.16 points was measurable through 15 years [33,37]. However, ECD is influenced by social status and this can explain the lack of correlation between ECD and infant feeding practices in LIC characterized by poverty and illiteracy [38], although breastfeeding is associated with a higher intelligence [39], maternal illiteracy can belittle this effect, and higher education can augment it.

In the EMR countries, the shortened duration of EBF among the HIC was associated with decrease in their tendency to be responsive to their child's needs and to stimulate his learning abilities through playthings. This is supported by the findings from a study conducted for 580 mothers for infants aged 0–12 months to assess their parenting behavior in relation to breastfeeding duration. The researchers found that formula given to babies at birth and short breastfeeding duration was significantly associated with low levels of nurturance, high levels of anxiety, and increased maternal use of parent-led routines. Furthermore, older mothers with higher education were significantly more likely to report higher levels of anxiety, lower levels of nurturing, and parent-led routine. However, mothers who were giving breast milk had higher levels of nurturing [40,41]. Yet, the mothers in the LIC of the EMR exhibited lower ECE and stimulation which could be related to the effects of poverty and life stress from ongoing conflicts [42,43].

Higher child development indices were associated with micronutrient intake, specifically iron and Vitamin A, from fresh foods versus medicinal supplements. These findings indicate that intake of micronutrients by children from natural foods enhances their learning more than intake from supplements. Hence, intake of fresh vegetable and fruits rich in Vitamin A and iron should be encouraged. However, the marketing of packed supplements misdirects mothers and health workers and drives them to prescribe such medicinal supplements rather than promote intake of fresh foods [44]. The research workers found that among North American children, 31.9% of 6-year-old children consumed fruit less than once daily and 19% consumed vegetables less than once daily. A study in Pakistan showed that an intervention that integrated responsive stimulation with nutrition education

and micronutrient powders resulted in a significant increase in development. Micronutrient supplementation did not produce additional benefits on child development [45,46].

The current study shows that ECD in the EMR is potentially at risk due to the decline in optimal breastfeeding practices with the superimposed poor living conditions in which children live, especially those in countries in conflict and food insecurities. Moreover, women in the HIC groups are mostly working mothers who have compromised breastfeeding practices due to lack of legislations for maternity support to continue breastfeeding and are not protected from the ongoing aggressive marketing of breast milk substitutes. Mother-infant interaction, skin-to-skin (STS) contact, maternal voice, expressions, and warmth are important for ECD. Hence, maternity laws should change and be extended to allow babies to reach their full potential in their development by being with and close to their mother for at least 2 years or more for completing child's needs of being nurtured in their development through breastfeeding and for achieving SDGs and NCF [47,48].

According to the WHO, adequate nutrition through breastfeeding can be achieved by enacting laws and policies, on the one hand, and interventions and services, on the other [49]. The laws and policies should mainly include the International Code of Marketing of Breast-milk Substitutes and its relevant subsequent resolutions (The Code) and the 10 steps of the Baby-friendly Hospital Initiative for supporting optimal breastfeeding practices. Inappropriate marketing of food products negatively affects mothers' choice to breastfeed and supports the introduction of safe and adequate complementary foods. The WHO recommends that services and interventions through primary health care cover should have adequate maternal nutrition through nutrition counseling; support for early initiation of EBF for 6 months and CBF for 2 years of beyond; support for appropriate complementary feeding and for transition to a healthy family diet; micronutrient supplementation for mother and child, when indicated; fortification of staple foods; growth monitoring and nutrition counseling and referral as needed; deworming and support for appropriate child feeding during illness; and management of moderate and severe malnutrition as well as overweight or obesity. Such actions could achieve the SDGs and targets for its support and the NCF by 2030, through government commitment and collaboration between nations [50].

The study had a few limitations. The study was conducted in a small number of countries, due to limited availability of ECD and ECE data for all countries in the EMR. The tools used for the assessment of ECD did not include maternal responsiveness or stimulation. Children learn more effectively from their mothers. This could explain the lack of statistical correlations of breastfeeding practices with ECD and ECE. Enhancing early child development is not only about responsiveness from any adult but mainly by mother's involvement in stimulating and teaching of her child which is influenced by breastfeeding practices that are proven to enhance maternal responsiveness and child's responsiveness to learning. Hence, future demographic surveys should include maternal stimulation in its assessment of ECD.

CONCLUSION

This study illustrates that the optimal early infant feeding practices are integral for enhancing ECE and ECD. Breastfeeding practices should be an integral tool for the stimulation of child development. We recommend that ECD and stimulation through ECE be included in the UNICEF/WHO training courses of breastfeeding counseling and that ECD modules likewise include breastfeeding practices, early practices of STS contact, parental-infant interactions during feeding for enhancing learning, and child development. Improving maternal education is particularly needed in the LIC while improving breastfeeding practices are needed in the HIC through support of maternity leave. Moreover, increasing access to skills and tools for nurtured parenting is a growing necessity for all income groups, particularly for the EMR countries in conflict, for children to achieve their optimal growth and development within the context of the NFC.

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