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## An Overview of the Dynamics of Breastfeeding in the Eastern Mediterranean Region


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# Abstract

The benefits of breastfeeding are well documented. Nevertheless, the practice of breastfeeding has become less common in recent history. Despite the many efforts of organizations such as the United Nations international children's emergency fund (UNICEF) and the world health organization (WHO), their recommendations and goals are not being met in many countries. Statistics from UNICEF and the WHO were used to compare the rates of breastfeeding parameters in the Eastern Mediterranean region (EMR) with global averages and to draw comparisons within the region. Different parameters to determine the dynamics of breastfeeding were investigated, including early initiation of breastfeeding, rate of children ever breastfed, exclusive breastfeeding and continued breastfeeding. The data analysis showed, that nearly all countries are still far away from reaching the WHO targets for 2025. Out of the 22 countries in the EMR, the only countries, which have reached the target rate of 50% exclusive breastfeeding, are Iran, Sudan and Afghanistan. There are a large variety of factors, which influence breastfeeding practices. In the past, the aggressive marketing of breast milk substitutes was identified as a deterring factor, so the international code of marketing of breast-milk substitutes was devised. Other influencing factors include misconceptions regarding breastfeeding and lack of guidance on lactation. It is the goal of the baby-friendly hospital initiative, to provide such guidance. Maternity leave and breastfeeding breaks at work are also areas, in which certain policies can improve the prevalence of breastfeeding. It can be concluded, that while the nutritional benefits of breastfeeding are widely known and accepted, political interventions are needed to support mothers and give newborns the best possible start to life.

## Abstract in German (Deutsche Zusammenfassung)

Die Vorteile des Stillens sind gut dokumentiert. Dennoch ist das Stillen in letzter Zeit seltener geworden. Trotz der zahlreichen Bemühungen von Organisationen wie UNICEF und der WHO, werden dessen empfohlene Ziele in vielen Ländern nicht erreicht. Statistische Daten von UNICEF und der WHO wurden verwendet, um die Stillparameter in der Region des östlichen Mittelmeerraums (EMR) mit globalen Durchschnittswerten zu vergleichen und um Vergleiche innerhalb der Region anzustellen. Es wurden verschiedene Parameter zur Bestimmung der Dynamik des Stillens untersucht, darunter der frühe Beginn des Stillens, die Rate der jemals gestillten Kinder, das ausschließliche Stillen und das fortgesetzte Stillen. Die Datenanalyse ergab, dass fast alle Länder noch weit davon entfernt sind, die WHO-Ziele für das Jahr 2025 zu erreichen. Von den 22 Ländern in der EMR, sind der Iran, der Sudan und Afghanistan die einzigen Länder, welche das Ziel von 50% ausschließlichem Stillen erreicht haben. Es gibt eine Vielzahl von Faktoren, die das Stillen beeinflussen. In der Vergangenheit wurde die aggressive Vermarktung von Muttermilchersatzprodukten als abschreckender Faktor identifiziert, weshalb der internationale Kodex für die Vermarktung von Muttermilchersatzprodukten veröffentlicht wurde. Weitere Einflussfaktoren sind Missverständnisse in Bezug auf das Stillen und die mangelnde Hilfe während der Stillzeit. Es ist das Ziel der babyfreundlichen Krankenhausinitiative, diese Hilfe zu gewährleisten. Mutterschutz und Stillpausen während der Arbeit sind ebenfalls Bereiche, in denen bestimmte Richtlinien die Prävalenz des Stillens verbessern können. Daraus lässt sich schließen, dass die ernährungsphysiologischen Vorteile des Stillens zwar allgemein bekannt sind, jedoch politische Interventionen erforderlich sind, um Mütter zu unterstützen und Neugeborenen den bestmöglichen Start ins Leben zu ermöglichen.

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# Abbreviations

WHO=World Health Organization

UNICEF=United Nations children's fund

EMR=Eastern Mediterranean Region

BFHI=Baby friendly hospital initiatives

EIBF=early initiation breastfeeding, within one hour of birth

EBF=exclusive breastfeeding, defined as no other food or drink, not even water, except breast milk for 6 months of life, with the exception of oral rehydration solution, drops and syrups (vitamins, minerals and medicines)

PBF=predominant breastfeeding, meaning that the predominant source of nourishment of the infant is from breast milk, while also receiving liquids

CB=Continued breastfeeding

MAD=minimum acceptable diet

MDD=minimum diet diversity

MMF=minimum meal frequency

UNRWA= United Nations Relief and Works Agency for Palestine refugees in the Near East

UAE=United Arab Emirates

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*"Breastfeeding is a natural 'safety net' against the worst effects of poverty ... Exclusive breastfeeding goes a long way toward cancelling out the health difference between being born into poverty and being born into affluence ... It is almost as if breastfeeding takes the infant out of poverty for those first few months in order to give the child a fairer start in life and compensate for the injustice of the world into which it was born."*

**James P. Grant, Executive Director of UNICEF (1980-1995)**

# Introduction and Research Questions

This thesis will focus on breastfeeding practices in the Eastern Mediterranean region, as defined by the WHO, thereby including the following 22 countries: (in alphabetic order) Afghanistan, Bahrain, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates and Yemen. Different parameters to determine the dynamics of breastfeeding will be investigated, including early initiation of breastfeeding, rate of children ever breastfed, exclusive breastfeeding and continued breastfeeding. Furthermore, this thesis will display the implementation of the baby-friendly hospital initiative and the international code for marketing of breast milk substitutes and their success in different countries. Another aim is to determine the influencing factors on breastfeeding, including societal, economic and governmental aspects. To conclude this thesis, areas of improvement and recommendations for the future will be discussed.

The main research questions, which this thesis will attempt to answer, are:

- How do the statistics on breastfeeding practices in the Eastern Mediterranean region compare globally? How do the statistics of breastfeeding practices compare amongst the countries of the Eastern Mediterranean region?
- What factors influence breastfeeding practices?
- What can be done to further improve breastfeeding practices?

At the time of compiling this thesis, no report existed to my knowledge, where the breastfeeding practices in the Eastern Mediterranean region were not only compared to other regions of the world, but also to the countries within the region. The aim of this thesis is to create a thorough report to provide an overview of the breastfeeding practices in the area and to identify areas of improvement. This report analyses the practice of breastfeeding not only through a scientific, but also an anthropological approach.

# Methods

## Literature

Dr Ayoub Al Jawaldeh of the WHO-EMRO graciously provided the latest official reports on breastfeeding in the Eastern Mediterranean region. The data was collected by both the WHO and UNICEF and was collected through national household surveys. I relied on the data from the WHO and UNICEF only, since they are recent and credible. From this global data, data specific to the countries in the Eastern Mediterranean region was extrapolated. This data was then illustrated in tables and graphs. For global comparisons, the means were calculated for the various parameters. Data on income groupings of the various countries is from the World Bank, valid from July 2019 until July 2020.

Further notes on the UNICEF expanded database:

The database was last updated in June 2019. Countries with data between the years of 2013 and 2018 were included in the calculation of both regional and global averages. Regional averages with <50% population coverage were suppressed. The presented prevalence of the practice in the population always represents the latest available estimate for each country in the database, except when trends are discussed. The data discussed always refers to both male and female infants.

Due to the nature of this thesis, a journalistic approach was taken to obtain the relevant information. Besides the statistics, theoretical information was found through the following method: upon recommendation of Dr Ayoub, I went on his researchgate page, to look at his most recent reports on 12$^{th}$ of March 2020. From there, the snowball sampling method was used to find other sources. Since the data from the WHO was incomplete, I was advised to use data from UNICEF, which he also provided.

For exclusive breastfeeding, only data from the last decade was included in the UNICEF data set but for the other parameters, earlier data was also reported.
On 05.05.2020, the Syrian and Palestinian embassies in Vienna were contacted for information on breastfeeding in refugee camps. On 07.05.2020, the Palestinian embassy

replied with links to two studies and one report on breastfeeding in refugee camps. As of the 2nd of July 2020, the Syrian embassy did not reply.
In all tables of this thesis, the prevalence of the different breastfeeding practices is reported in percentages %.

To find out why the UNICEF database on breastfeeding practices does not include Western European countries or North America, UNICEF was contacted on 18.05.2020. As of the 2nd of July 2020, no reply was received.

### Statistical Analysis

All statistical analyses were done using Microsoft Excel 14.2.0. The relevant data from the UNICEF Excel file was extracted and copied into another Excel file. The UNICEF data included the average rates for each country. This data was used to create graphs and tables for illustration purposes. Furthermore, regional averages were calculated.

## A Brief History of Breastfeeding

Wet nursing is a practice, that used to be a common and safe alternative to a mother's natural breast milk and began as early as 2000 BC and continued until the 20th century. During this time, wet nursing evolved from being a practice of need to an alternative of choice. This practice was highly regulated with laws and contracts and continued until feeding bottles were introduced in the 19th century, which led to the extinction of wet nursing as a profession. The use of animal milk to feed infants has also been reported as early as 2000 BC. Since then, other milk sources have evolved, including the synthetic formula we use today. The development of milk formula negatively affected patterns of breastfeeding practices, even though research revealed that breastfeeding was superior to baby formula. Social stigma against wet nurses also led to substituting wet-nursing for bottle-feeding. In the 20th century, aggressive marketing techniques, sometimes directly aimed at doctors, lead to a global decrease in breastfeeding rates. (Stevens, Patrick, & Pickler, 2009) Efforts from the WHO and UNICEF to tackle this issue started mainly in the 1970s, and include the 'international code of marketing of breast milk substitutes' and the 'Baby friendly hospital initiative', which will be discussed in further detail later on.

# Benefits of Breastfeeding

Breastfeeding is a powerful tool for ensuring not only the survival but also the general wellbeing of a child.

## Short-term benefits for children

Breast milk has nutritional benefits and protects children from infection. Infants who are breastfed for longer periods have lower infectious morbidity and mortality and fewer malocclusions than those who are breastfed for shorter periods or not at all. Breastfeeding is also important for the establishment of a healthy gut flora. (Victora et al., 2016) Moreover, breastfeeding promotes healthy growth and boosts the development of a child early on in its life. (WHO/UNICEF, 2018) Breast milk contains a unique composition of bioactive factors, which have the ability to overcome the immature immune response in children born preterm and may prevent inflammatory diseases, like necrotizing enterocolitis. (Gregory & Walker, 2013)

## Long-term benefits

There is some evidence, that breastfeeding might protect against both overweight and diabetes later in life. (Victora et al., 2016) There is also evidence for a small protective effect of breastfeeding against high systolic blood pressure. Furthermore, breastfeeding has been linked with better performance in intelligence tests, specifically with an IQ increase of 3.5 points. (Horta & Victora, 2013) In the long term, the immunological benefit of breast milk mentioned above, also leads to optimal growth and neurodevelopment. (Gregory & Walker, 2013)

## Benefits for mothers

Breastfeeding not only has benefits for the child, but for the mother too. It can prevent breast cancer, improve birth spacing and could also reduce the risk of diabetes and ovarian cancer. (Victora et al., 2016) Furthermore, breastfeeding has been proven to help prevent post-partum hemorrhage, post-partum depression, heart disease and type 2 diabetes. (WHO/UNICEF, 2018)

It is estimated, that scaling up of breastfeeding can prevent around 823 000 child deaths and 20 000 breast cancer deaths per year. (Victora et al., 2016)

## Benefits of birth spacing

The health of both women and children can be improved when there is at least 2 years between the birth of a child and the beginning of the next pregnancy. (UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP, 2010) Exclusive breastfeeding for six months can protect a woman from pregnancy by up to 98%. This is only the case, though, if the woman's menstrual periods have not returned, she breastfeeds frequently both in the daytime and at night and the baby is not given any other food or drink, or a pacifier. (WHO/UNICEF, 2005) Birth spacing not only has health benefits, but it also empowers women to pursue education and jobs and to have greater reproductive autonomy. (UNICEF, 2016)

## Economic benefits

The act of not breastfeeding is associated with an annual economic loss of $ 302 billion or 0.49 % of the world's gross national income (GNI). Low-income and middle-income countries lose an estimated $ 70.9 billion, or 0.39 % of their GNI. High-income countries have losses of $ 231.4 billion, or 0.53 % of their GNI. Five countries, including two from the Eastern Mediterranean region (Saudi Arabia and United Arab Emirates) lose more than 0.75 % of their GNI. This estimated economic loss associated with breastfeeding is due to the cost of lower cognition, less human capital and the cost of infant and child morbidity. (Rollins et al., 2016) It is suggested, that breastfeeding leads to better learning outcomes and thus, increased productivity and earnings. (UNICEF, 2016)

## Environmental benefits

Breast milk is a safe type of food for the environment, with no association to pollution, packaging or waste. Breast milk substitutes on the other hand, require energy in their production and transport, and packaging (usually plastic). Furthermore, the preparation of milk bottles and subsequent cleaning requires energy, water and cleaning agents. (Rollins et al., 2016) Thus, the vital role of breastfeeding in achieving global environmental goals should be recognized.

## Recommendations of the WHO and UNICEF on Breastfeeding

Due to the many health benefits, the official recommendations of both the WHO and UNICEF are:

- Initiation of breastfeeding within the first hour of life
- Exclusive breastfeeding for the first 6 months, without any additional food or fluid (not even water)
- Nutritionally adequate and safe complementary feeding starting from the age of 6 months with continued breastfeeding up to 2 years of age or beyond
- Breastfeeding on demand, as often as the child wants

(WHO/UNICEF, 2018)

To achieve these goals, the WHO and UNICEF have outlined ten steps:

1. Comply fully with the so-called 'International Code of Marketing of Breast-milk Substitutes' and relevant world health assembly resolutions. Have a written infant feeding policy that is routinely communicated to staff and parents. Establish ongoing monitoring and data-management systems.
2. Ensure that staff has sufficient knowledge, competence and skills to support breastfeeding.
3. Discuss the importance and management of breastfeeding with pregnant women and their families.
4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.
5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
6. Do not provide breastfed newborns with any food or fluids other than breast milk, unless medically indicated.
7. Enable mothers and infants to remain together and to practice rooming-in 24 hours a day.
8. Support mothers to recognize and responds to their infants' cues for feeding.
9. Counsel mothers on the use and risks of feeding bottles, teats and pacifiers.
10. Coordinate discharge so that parents and their infants have timely access to ongoing support and care.

The WHO and UNICEF launched the ‘Baby-friendly Hospital Initiative’, which is supposed to implement the 10 steps mentioned above, to promote breastfeeding worldwide. The first 2 points are considered critical management procedures and steps 3 through 10 are key clinical practices. (WHO/UNICEF, 2018)

## WHO Targets for 2025

The 6 WHO Targets for 2025 are as follows:

1. 40% global reduction in the number of stunted children under five
2. 50% reduction of anemia in women of reproductive age
3. 30% reduction of low birth weight
4. No increase in childhood overweight
5. Increased rate of exclusive breastfeeding in the first six months to at least 50%
6. Reduced childhood wasting to less than 5%
   (WHO/UNICEF, 2017b)

While only one of the goals (number 5) directly refers to breastfeeding, improving the rate of breastfeeding indirectly also affects the goals regarding childhood wasting, childhood overweight and stunting.

## Innocenti Declaration

The Innocenti Declaration recognizes the many benefits of breastfeeding, which are backed by research. Because of these benefits, UNICEF/WHO declare “all women should be enabled to practice exclusive breastfeeding and all infants should be fed exclusively on breast milk from 4-6 months of age. Thereafter, children should continue to be breastfed, while receiving appropriate and adequate complementary foods, for up to two years of age or beyond.” The Innocenti Declaration includes operational targets and advice for international organizations. (WHO/UNICEF, 2005)

It should be noted, that while the WHO recommends 6 months of exclusive breastfeeding, in the Innocenti declaration, exclusive breastfeeding refers to breastfeeding for 4-6 months.

## International Code for Marketing of Breast Milk Substitutes

The WHO and UNICEF have continually emphasized the many benefits of breastfeeding. However, the aggressive marketing of infant formula greatly undermines the efforts to increase breastfeeding rates. Therefore, in 1981, the international code for marketing of breast milk substitutes was formulated. The aim of this code is to ensure safe and adequate nutrition for children, through the promotion of breastfeeding, while ensuring proper use of infant milk formula when necessary and regulating marketing and distribution of such products. (WHO, 1981)

Some of the contents of the code are as follows:

- Member states should ensure that complementary foods are not marketed for or used in ways, which undermine exclusive and sustained breastfeeding.
- Labels on complementary food **must** include statements on the importance of continued breastfeeding for up to two years and beyond, not introducing complementary feeding before 6 months of age and the appropriate age of introduction of the food, which must not be less than 6 months.
- Gifts and/or incentives to healthcare professionals should be prohibited
- Companies should not give gifts or coupons to families
- Marketing practices must be regulated (WHO, 2018)

A status report on the implementation of the international code was published in 2018. In it, there is an outline on which countries implement the international code of marketing of breast-milk substitutes, to which extent and when the implementation started. The countries of the Eastern Mediterranean region are listed below. Unfortunately, Palestine was not included in the status report.

- Full provisions in law: Afghanistan (2009), Bahrain (1995), Kuwait (2004), Lebanon (2008), Pakistan (2002) and Yemen (2002)
- Many provisions in law: Egypt (2010), Saudi Arabia (2007), Syrian Arab Republic, (2000) and Tunisia (1983)
- Few provisions in law: Djibouti (2010), Islamic Republic of Iran (2010), Iraq (2015), Jordan (2015), Oman (2000), Sudan (2000), United Arab Emirates (no dedicated code legislation but code-related provisions incorporated in other legal measures, 2011)

- No legal measures: Libya, Morocco, Qatar, Somalia,

In the countries with laws in place, persistent violations still occur, most commonly in health-care settings (maternity hospitals, for example) and through advertisements in the public domain. Although most countries in the Eastern Mediterranean region prohibit the promotion of breast milk substitutes to the public and include provisions, which enable governments to enforce laws, only few countries prohibit the promotion to healthcare professionals. (WHO, 2018)

## Baby Friendly Hospital Initiative

The Baby Friendly Hospital Initiative (BFHI) was launched in 1991-1992, following the Innocenti Declaration of 1990. The global initiative aims to implement practices, which protect, promote and support breastfeeding. Since the launch of the BFHI, more than 156 countries around the world now implement it, which includes over 20,000 hospitals. (Macenroe, 2010)

### The success of the Baby friendly hospital initiative

The likelihood of improved breastfeeding practices is dependent on the number of steps from the 'BFHI Ten Steps' a mother is exposed to. There is supporting evidence to show that adherence to the 'BFHI Ten Steps' has a positive effect on short-term, medium-term and longer-term breastfeeding outcome globally. (Pérez-Escamilla, Martinez, & Segura-Pérez, 2016)

## Baby-friendly hospitals in the Eastern Mediterranean Region

**Table 1 Number of baby-friendly hospitals in the countries of the EMR**

| Country | Designated Hospital |
|---|---|
| **Iran** | 376 |
| **Tunisia** | 141 |
| **Kuwait** | 1 |
| **Bahrain** | 6 |
| **Qatar** | 0 |
| **United Arab Emirates** | 15 |
| **Oman** | 51 |
| **Saudi Arabia** | 60 |
| **Egypt** | 13 |
| **Jordan** | 3 |
| **Lebanon** | 21 |
| **Morocco** | 17 |
| **Palestine** | 0 |
| **Djibouti** | 4 |
| **Iraq** | 15 |
| **Pakistan** | 42 |
| **Sudan** | 25 |
| **Afghanistan** | 18 |
| **Somalia** | 0 |
| **Syria** | 21 |
| **Yemen** | 0 |
| **Libya** | 0 |

(Al-Jawaldeh & Abul-Fadl, 2018)

Qatar, Palestine, Somalia, Yemen and Libya did not have any baby-friendly hospitals at the time of data collection. In comparison, Iran and Tunisia have quite a lot of baby-friendly hospitals at 376 and 141 respectively. While it should be noted that Iran has more than double the amount of baby-friendly hospitals than Tunisia, Iran has more than 7 times the population of Tunisia.

In an assessment of the impact of BFHI on nutritional status of children under 5 years old, the following was found:

- The implementation of BFHI affects the nutritional status in EMR countries
- Specifically in countries with ongoing conflict and political instability, breastfeeding should be protected to mitigate the effects of emergency situations
- Breastfeeding can benefit both high- and low-income countries
- Political enforcement can assist the implementation of BFHI
- Political intervention is required to control donations of breast-milk substitutes in healthcare facilities

  (Al-Jawaldeh & Abul-Fadl, 2018)

## Baby-friendly Hospital Initiative case studies

In 2017, the WHO and UNICEF published a report titled 'Country experiences with the Baby-friendly Hospital Initiative'. In it, case studies from two EMR countries were mentioned: Kuwait and Saudi Arabia. The following is a brief summary of these two case studies.

**Kuwait:** according to the report, there are 2 BFHI accredited hospitals in Kuwait, but according to the (newer) data in the table above, there is only 1. Only 12% of births in Kuwait take place in one of the two baby-friendly hospitals. On a positive note, accredited clinics have reported positive trends in early initiation of breastfeeding. The main challenges Kuwait is facing in respect to the integration of the BFHI are the following:

- Limited funding and government support
- Inadequate coordination between national and local authorities
- Standards and guidelines for mother-friendly childbirth practices and maternity care are not yet developed
- Even though ministerial decrees have been issued to enforce BFHI, many hospitals do not maintain training
- Mainly in the private sector level, the BFHI is facing coverage challenges
- Continuous monitoring is a challenge at all levels; this includes monitoring of the international code for marketing of breast milk substitutes

**Saudi Arabia:** in the last 20 years, the number of baby-friendly hospitals has increased steadily. In the past 5 years, primary healthcare centers with maternity services but without birthing facilities were designated as baby-friendly. New workers received 30-minute orientations, while on-site training of 20 hours is provided for all staff working in maternity or childcare. A clear positive relationship has been found between training and breastfeeding rates. Saudi Arabia faces the following challenges in respect to implementation of the BFHI:

- Human resource challenges: some healthcare workers were reluctant to the initiative at the beginning
- Most of the healthcare facilities had issues with data collection on breastfeeding parameters
- The community support and private sector engagement is very little
- Marketing of breast milk substitutes continues to be an issue in unaccredited clinics

(WHO/UNICEF, 2017a)

## Influencing Factors

**Delivery:** Women who have a cesarean delivery are less likely to practice early initiation of breastfeeding (within the first hour). EIBF is an important factor in determining future breastfeeding, and therefore has an effect on infant mortality. (Jawaldeh et al., 2019)

**Income:** Breastfeeding is practiced less in high-income countries. For every doubling in national gross domestic product per person, the number of infants breastfed at 12 months decreases by 10%. (Victora et al., 2016) However, as is discussed in the chapter on income later on, such a trend cannot be established for the countries in the EMR, based on the data available.

**Education and Employment:** In recent years, women have gotten more opportunities to get educated and work, specifically in developing countries. While this is an important step in the right direction for female empowerment, it is difficult for women to breastfeed outside their home. Exclusive breastfeeding and continued

breastfeeding for two years continue to be challenging for women in the workforce. Therefore, women empowerment in terms of promoting opportunities in education and employment should also include additional maternity support. This support can be in the form of creating breastfeeding friendly workplaces. (Abul-Fadl & Al-Jawaldeh, 2020) Furthermore educating women and improving literacy rates protects them from misinformation on breastfeeding and makes them less easy targets for marketing of breast milk substitutes. Unfortunately, even in countries, where there are laws in place to permit women to breastfeed during working hours, many women work in the informal economy and thus, do not enjoy such rights. (Rollins et al., 2016) Limited or no maternity leave and lack of time are listed as possible barriers to breastfeeding. (UNICEF, 2016)

**Problems with breastfeeding:** Mothers may encounter a variety of problems, which can discourage them from continuing breastfeeding, including mastitis and difficulty in latching on. (Takai et al., 2019) Insufficient prenatal care and lactation counseling prevents women from continuing to breastfeed, if they encounter such issues. (UNICEF, 2016)

**Society:** Many societal aspects are potential barriers to breastfeeding, such as lack of privacy and support from fathers and society. (UNICEF, 2016)

# Analysis of Breastfeeding Indicators

It should be noted, that in the entire UNICEF database, for all parameters, regional aggregates with less than 50% population coverage, were suppressed. The UNICEF database also includes some other additional parameters, but only the ones listed in the table below were included, since they directly refer to the goals and recommendations of UNICEF/WHO on breastfeeding.

## Definitions of Breastfeeding indicators

**Table 2 Definitions of the breastfeeding indicators**

| Indicator name | Definition |
|---|---|
| **Early initiation of breastfeeding** | Children born in the last 24 months who were put to the breast within one hour of birth |
| **Exclusive breastfeeding** | Infants 0-5 months of age who received only breast milk during the previous day |
| **Continued breastfeeding at 1 year** | Children 12-15 months of age who received breast milk during the previous day |
| **Ever breastfed** | Percentage of newborns ever breastfed |

(WHO/UNICEF, 2018)

# Global Comparisons of Breastfeeding Indicators

## Children breastfed at 2 years: Global comparison

**Table 3 Average rate (%) of children breastfed at 2 years old in the different UNICEF regions**

| UNICEF Region | Rate (%) of children breastfed at 2 years |
|---|---|
| **Eastern and Southern Africa** | 86 |
| **West and Central Africa** | 98 |
| **Middle East and North Africa** | 63 |
| **South Asia** | 99 |
| **East Asia and Pacific** | 78 |
| **Latin America and Caribbean** | 65 |
| **Eastern Europe and Central Asia** | 70 |

(WHO/UNICEF, 2018)

The UNICEF regions differ from the WHO regions. However, the region, which most closely overlaps with the eastern Mediterranean region, as defined by the WHO, is the Middle East and North Africa in this case. Of the 22 countries investigated in this thesis, the following 17 are part of the 'Middle East and North Africa': Bahrain, Qatar, Egypt, Lebanon, Libya, Morocco, Oman, Iran, Iraq, Jordan, Kuwait, Saudi Arabia, Palestine, Syria, Yemen, Tunisia, United Arab Emirates. China, Brazil and Russia are not included in the data presented above, to meet adequate population coverage. Nevertheless, it is notable that the Middle East and North Africa have the lowest recorded percentage of children, which are breastfed at 2 years.

## Exclusive breastfeeding: Global comparison

The years of data sources are between 2013 and 2018, which is the most recent data available.

**Table 4 Average rate (%) of exclusive breastfeeding in the UNICEF regions**

| UNICEF region | Rate of exclusive breastfeeding (%) |
|---|---|
| **East Asia and the Pacific** | 30 |
| **Eastern Europe and Central Asia (excluding Russian Federation)** | 33 |
| **Eastern and Southern Africa** | 55 |
| **Latin America & the Caribbean (excluding Brazil)** | 38 |
| **Middle East and North Africa** | 30 |
| **North America** | 35 |
| **South Asia** | 54 |
| **West and Central Africa** | 34 |
| **Western Europe** | -[1] |

(United Nations Children's Fund, 2019)

Again, the data above includes the UNICEF country groupings, which is different from the WHO groupings. However, it is evident that the rate of exclusive breastfeeding in the Middle East and North Africa, which mostly overlaps with the Eastern Mediterranean region, is only 30%. Together with East Asia and the Pacific, this rate is the lowest globally, however, UNICEF omitted data from Western Europe, so the comparison is slightly skewed. Using the data on the 22 countries of the WHO Eastern Mediterranean region from UNICEF, a mean of 32% was calculated. Despite this number being slightly higher than the 30% reported above, it is still well below the recommendation of UNICEF/WHO, which is 50%. Globally, around 40% of children are exclusively breastfed; so the average rate of exclusive breastfeeding in the EMR is considerably lower the global average.

[1] No data collected

According to UNICEF, only 23 countries achieve average rates of exclusive breastfeeding above 60% globally. No EMR country is included in this list: Bolivia, Burundi, Cabo Verde, Cambodia, Democratic People's Republic of Korea, Eritrea, Kenya, Kiribati, Lesotho, Malawi, Federated States of Micronesia, Nauru, Nepal, Peru, Rwanda, São Tome and Principe, Solomon Islands, Sri Lanka, Eswatini, Timor-Leste, Uganda, Vanuatu and Zambia. It is noteworthy, that most of these countries are either in Africa of Oceania. The reason for this may be, that a lot of these nations are islands, and so import of breast milk substitutes may be limited. Other countries, such as Eswatini are landlocked, and without a port, the access to breast-milk substitutes may also be limited.

## Continued Breastfeeding Global Comparison

**Table 5 Average rate (%) of continued breastfeeding at 12-15 months in the UNICEF regions**

| UNICEF region | Rate (%) of continued breastfeeding at 12-15 months |
|---|---|
| **East Asia and the Pacific** | 43 |
| **Eastern Europe and Central Asia (excluding Russia)** | 64 |
| **Eastern and Southern Africa** | 87 |
| **Latin America & the Caribbean (excluding Brazil)** | 57 |
| **Middle East and North Africa** | 67 |
| **North America** | 15 |
| **South Asia** | 84 |
| **West and Central Africa** | 87 |
| **Western Europe** | -[1] |

(United Nations Children's Fund, 2019)

Besides Western Europe, North America is the most economically developed region, which has the lowest rate of continued breastfeeding at only 15%. This is far below the second lowest rate of 43% of East Asia and the Pacific. The highest rates of continued breastfeeding are in West and Central Africa and Eastern and Southern Arica. In the Middle East and North Africa, the rate of continued breastfeeding is 67%, which is somewhat in the middle of the lowest and highest rates.

## Early initiation of breastfeeding global comparison

**Table 6 Average rate (%) of early initiation of breastfeeding in the UNICEF regions**

| UNICEF region | Rate (%) of early initiation of breastfeeding |
|---|---|
| **East Asia and the Pacific** | -[1] |
| **Eastern Europe and Central Asia (excluding Russian Federation)** | -[1] |
| **Eastern and Southern Africa** | 96 |
| **Latin America & the Caribbean (excluding Brazil)** | 96 |
| **Middle East and North Africa** | 95 |
| **North America** | 74 |
| **South Asia** | 96 |
| **West and Central Africa** | 96 |
| **Western Europe** | -[1] |

(United Nations Children's Fund, 2019)

Compared to the other parameters, the rate of early initiation of breastfeeding is reported for the lowest number of regions. For the regions, which do have a rate listed, the rates are very similar at 95 or 96%. The only outlier is North America, with an average rate of only 74%.

# Breastfeeding Practices within the Eastern Mediterranean Region

## Rates of exclusive breastfeeding in the EMR

The data was updated in 2019 and only data, which at the time was less than 10 years old, was included. The most recent data is recorded below. For EIBF, UNICEF only included data if it was from the past decade. For early initiation of breastfeeding and continued breastfeeding, earlier data is also included.

Table 7 Average rate (%) of exclusive breastfeeding in the countries of the EMR

| Country | Exclusive breastfeeding <6 months (%) | Year of data source |
|---|---|---|
| **Iran** | 53.1 | 2010 |
| **Tunisia** | 13.5 | 2018 |
| **Kuwait** | No information | |
| **Bahrain** | No information | |
| **Qatar** | 29.3 | 2012 |
| **United Arab Emirates** | No information | |
| **Oman** | 23.2 | 2017 |
| **Saudi Arabia** | No information | |
| **Egypt** | 39.5 | 2014 |
| **Jordan** | 25.4 | 2017 |
| **Lebanon** | No information | |
| **Morocco** | 35 | 2017 |
| **Palestine** | 38.1 | 2014 |
| **Djibouti** | 12.4 | 2012 |
| **Iraq** | 25.8 | 2018 |
| **Pakistan** | 47.5 | 2013 |
| **Sudan** | 54.6 | 2014 |
| **Afghanistan** | 57.5 | 2018 |
| **Somalia** | 5.3 | 2009 |
| **Syria** | 42.6 | 2009 |
| **Yemen** | 9.7 | 2013 |
| **Libya** | No information | |

(United Nations Children's Fund, 2019)

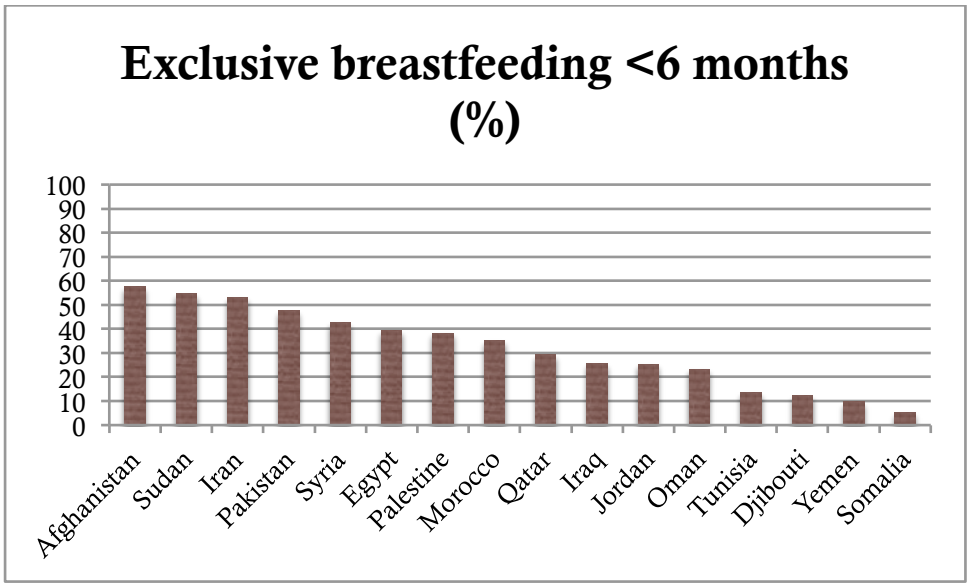


**Figure 1 Average rate (%) of exclusive breastfeeding in the countries of the EMR, based on data from UNICEF 2019**

Only countries with available data were included in the graph above. As can be seen, only Afghanistan, Iran and Sudan reach the 50% rate in exclusive breastfeeding, which is recommended by the WHO. The lowest rates are observed in Somalia, Djibouti, Yemen and Tunisia, with rates around 10% or less.

### Trends in exclusive breastfeeding

For the following countries, data on exclusive breastfeeding has been recorded on more than one occasion, in different years. For countries with more than 3 dates of data collection, graphs were created to illustrate the trends:

- **Afghanistan**: in 2015, 43.1% of EBF rate was recorded, while 57.5% was recorded in 2018. This is a 14.4% increase in 3 years.

- **Egypt:**

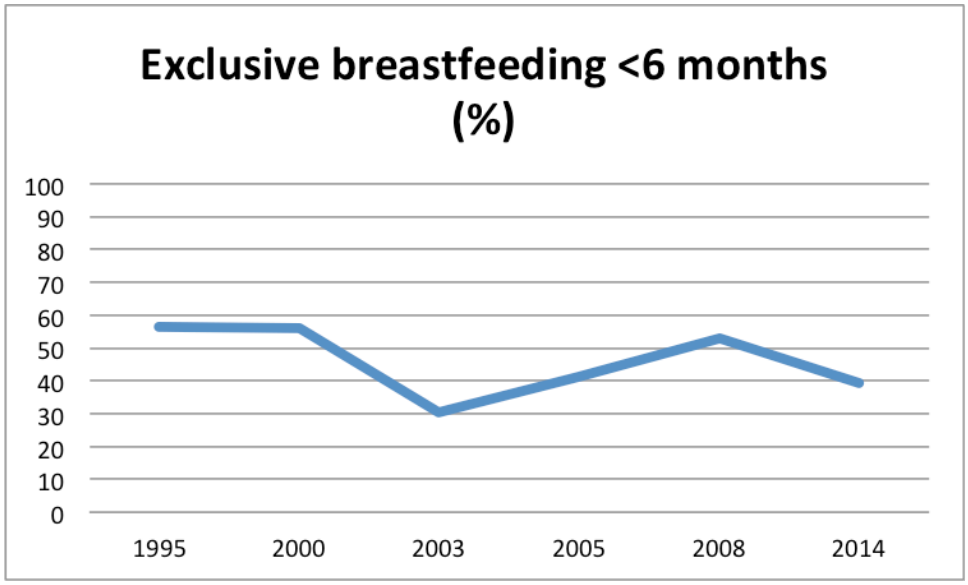


**Figure 2 Average rate (%) of exclusive breastfeeding <6 months in Egypt from 1995 to 2014, based on data from UNICEF 2019**

Data available from 1995 (56.3%), 2000 (56.1%), 2003 (30.4%), 2005 (41.1%), 2008 (52.8%) and 2014 (39.5%). There are large fluctuations with both increased and decreased rates over the years but in general, the most recent data is much lower (by 16.8%) than the earliest recorded rates of EBF.

- **Iran:** in the year 2000, EBF rate of 44.1% was recorded. The most recent data from 2010, showed an increase to 53.1%.

- **Iraq:**

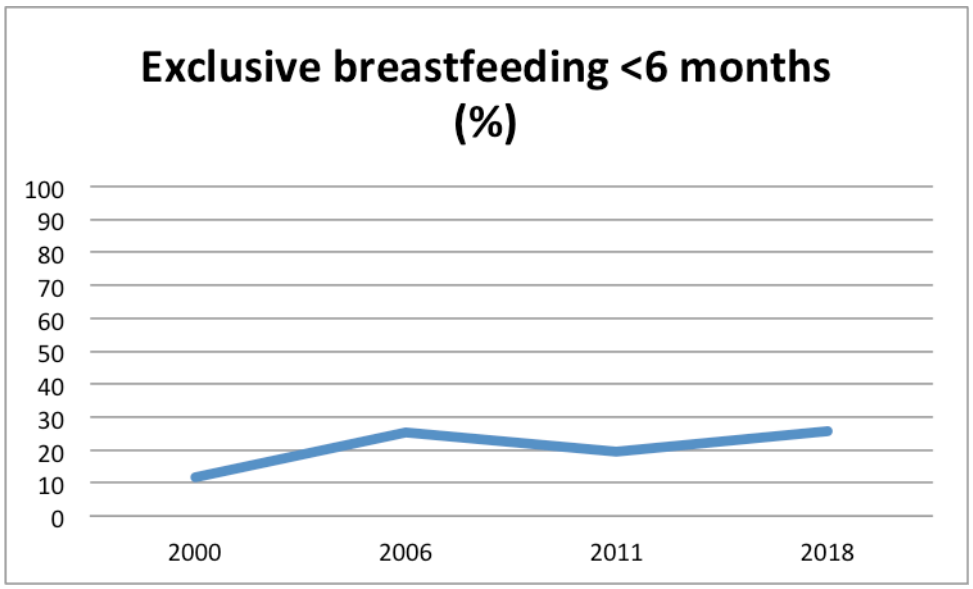


**Figure 3 Average rate (%) of exclusive breastfeeding <6 months in Iraq from 2000 to 2018, based on data from UNICEF 2019**

In the year 2000, 11.6% was recorded as the EBF rate. This number increased to 25.4% in 2006. In 2011 it dropped down again to 19.4%. The most recent data showed an increase again to 25.8%.

- **Jordan:**

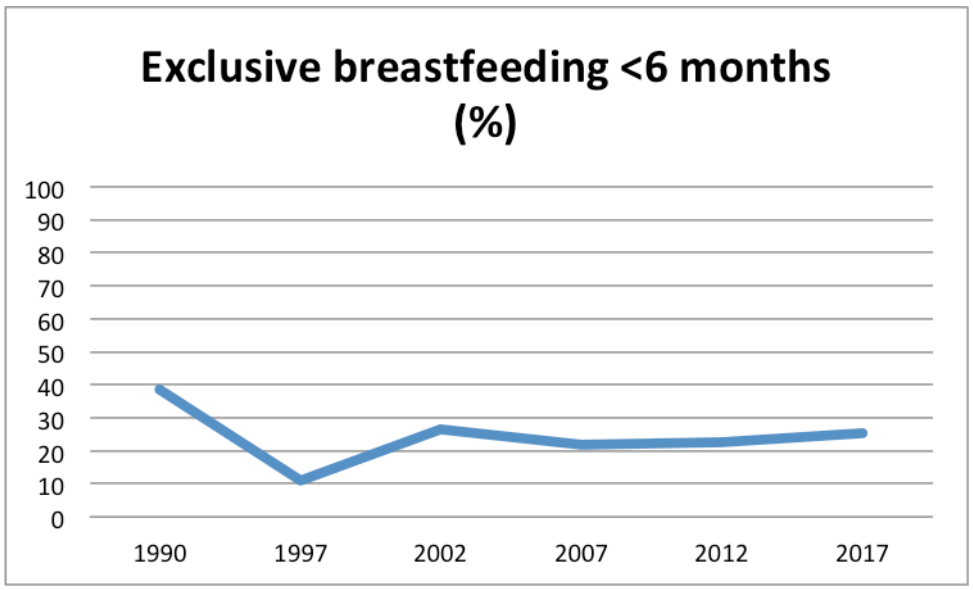


**Figure 4 Average rate (%) of exclusive breastfeeding <6 months in Jordan from 1990 to 2017, based on data from UNICEF 2019**

The rate of EBF is well documented in Jordan. In 1990, the rate was 38.6%, then it was only 11.0% in 1997. In 2002, the rate of EBF increased again to 26.7%. In 2007 it was 21.8% and in 2012 it was 22.7%. The most recent data from 2017 showed an EBF rate of 25.4%. It is apparent that there has been a slow but steady increase over the last few years, however the current EBF rate is much lower than the earliest recorded rate from three decades ago.

- **Morocco:**

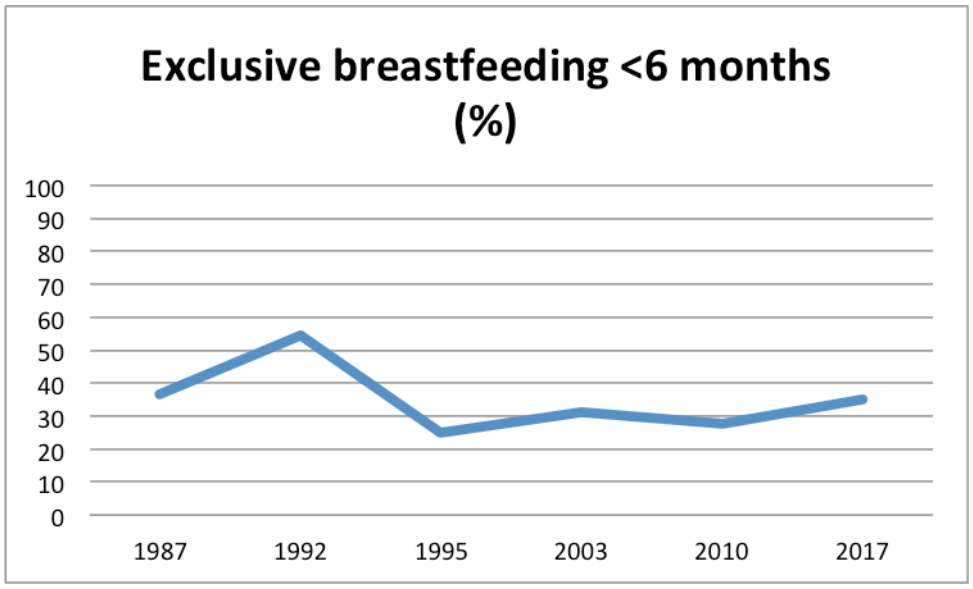


**Figure 5 Average rate (%) of exclusive breastfeeding <6 months in Morocco from 1987 to 2017, based on data from UNICEF 2019**

Very early data is available from 1987, which showed an EBF rate of 36.7%. Then, in 1992, the rate increased to 54.5%. In 1995, 24.8% was recorded. In 2003, the rate of EBF was 31.0%. In 2010, 27.8% was recorded and the most recent data from 2017 showed an EBF rate of 35.0%. Despite there being fluctuations over the years, there is almost no difference between the rate of EBF in the earliest recorded data and the most recent data.

- **Oman:** a drop in EBF was recorded from 32.8% in 2014 to 23.2% in 2017.
- **Palestine:** in 2006, 24.8% was recorded, in 2010, 28.7% was recorded and the most recent data from 2014 shows an increase to 38.1%.
- **Sudan:** in 2010, the recorded rate of EBF was 41%, while, more recently, in 2014; an impressive increase to 54.6% was recorded.
- **Syria:** in 2006, 28.5% was recorded and subsequently, there was an increased rate of 42.6% in 2009.

- **Somalia:** in the year 2000, the rate of EBF was already very low at 9%. In 2006, there was little improvement to 9.1%. The most recent data from 2009 shows a worryingly low rate of 5.3%.
- **Tunisia:** the earliest recorded data is from 1988, where 18% was recorded. In 2006, the rate of EBF was very low at 6.2%. Then in 2011, the rate of EBF was still quite low at 8.5%. The most recent data is from 2018 and there was a slight increase to 13.5%.
- **Yemen:** in 1991, the rate of EBF was 13.1%. Then in 1997, there was a slight increase to 17.8%. In 2003, there was a decrease again to 11.5% and then the rate further decreased to 9.7% in 2013.

(United Nations Children's Fund, 2019)

Afghanistan, Iran, Iraq, Palestine, Sudan and Syria are some of the few countries where a positive increase in EBF rates is observed.

## Rates of early initiation of breastfeeding in the EMR

**Table 8 Average rate (%) of early initiation of breastfeeding in the countries of the EMR**

| Country | Early initiation of breastfeeding within one hour of birth (%) | Year of data source |
|---|---|---|
| **Iran** | 68.7 | 2010 |
| **Tunisia** | 31.6 | 2018 |
| **Kuwait** | No information | |
| **Bahrain** | No information | |
| **Qatar** | 33.5 | 2012 |
| **United Arab Emirates** | 23.2 | 1995 |
| **Oman** | 82 | 2017 |
| **Saudi Arabia** | No information | |
| **Egypt** | 27.1 | 2014 |
| **Jordan** | 67.0 | 2017 |
| **Lebanon** | 41.3 | 2004 |
| **Morocco** | 42.6 | 2017 |
| **Palestine** | 40.8 | 2014 |
| **Djibouti** | 52.0 | 2012 |
| **Iraq** | 32.4 | 2018 |
| **Pakistan** | 19.6 | 2018 |
| **Sudan** | 68.7 | 2014 |
| **Afghanistan** | 62.8 | 2018 |
| **Somalia** | 23.4 | 2009 |
| **Syria** | 45.5 | 2009 |
| **Yemen** | 52.7 | 2013 |
| **Libya** | No information | |

(United Nations Children's Fund, 2019)

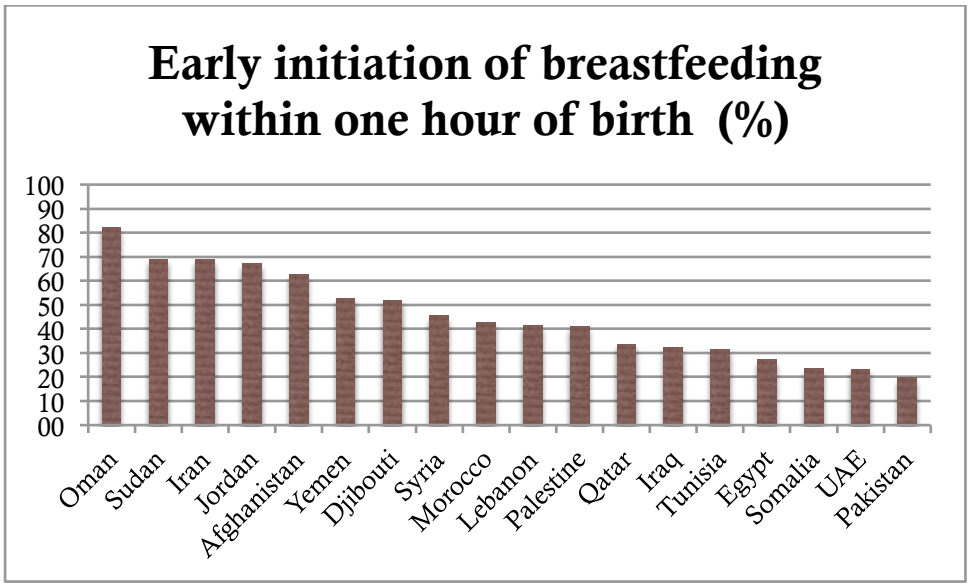


**Figure 6 Average rate (%) of early initiation of breastfeeding in the countries of the EMR, based on data from UNICEF 2019**

Only countries with data available were included in the graph above. The highest rate is observable in Oman, followed by Sudan, Iran, Jordan and Afghanistan. The lowest rates are in Pakistan, the UAE, Somalia and Egypt.

### Trends in early initiation of breastfeeding

For the following countries, data on early initiation of breastfeeding has been recorded on more than one occasion, in different years. The following graphs have been created to illustrate the trends for countries with more than 3 dates of data collection.

- **Afghanistan**: there was an increase from 40.9% in 2015 to 62.8% in 2018.

- **Egypt**:

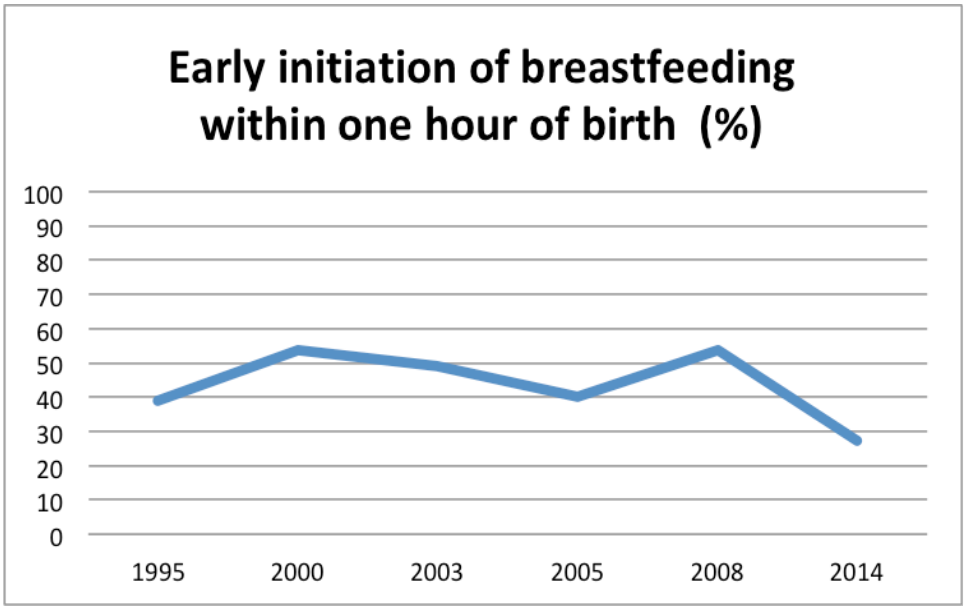


**Figure 7 Average rate (%) of early initiation of breastfeeding in Egypt from 1995 to 2014, based on data from UNICEF 2019**

The rate of EIBF increased from 39% in 1995 to 53.9% in the year 2000. Then, there was a drop to 49.1% in 2003 and a further decrease to only 40.1% in 2005. In 2008, there was an increase again to 53.8% in 2008. The most recent data from 2014, unfortunately, shows a dramatic drop to only 27.1%.

- **Iraq**:

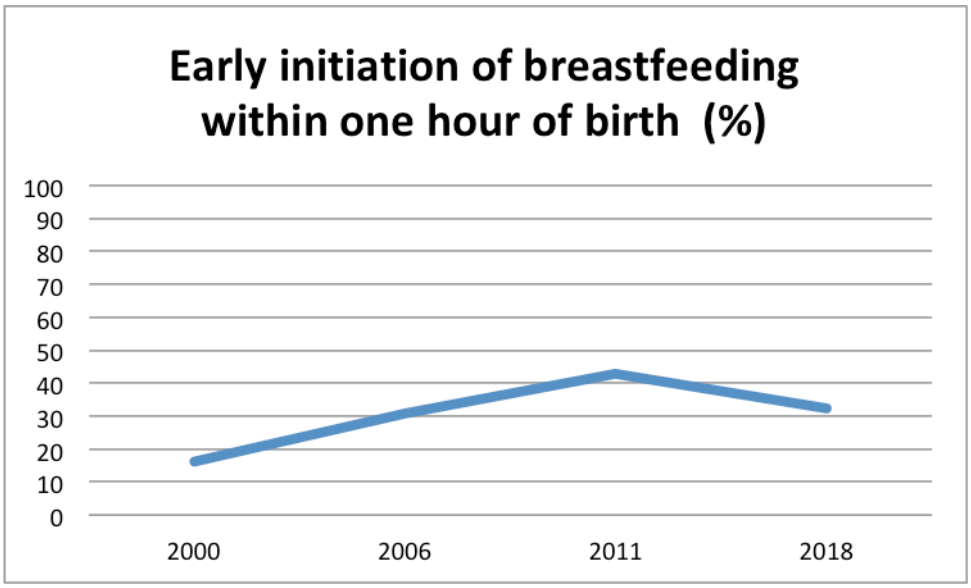


**Figure 8 Average rate (%) of early initiation of breastfeeding in Iraq from 2000 to 2018, based on data from UNICEF 2019**

The earliest data on EIBF in Iraq is from the year 2000, where the rate was merely 16.2%. It nearly doubled by the year 2006 to 30.6%. By the year 2011, there was a further increase to 42.8%. However, in 2018, the rate dropped back down to 32.4%, which is still double of what it was almost 2 decades ago.

- **Jordan**:

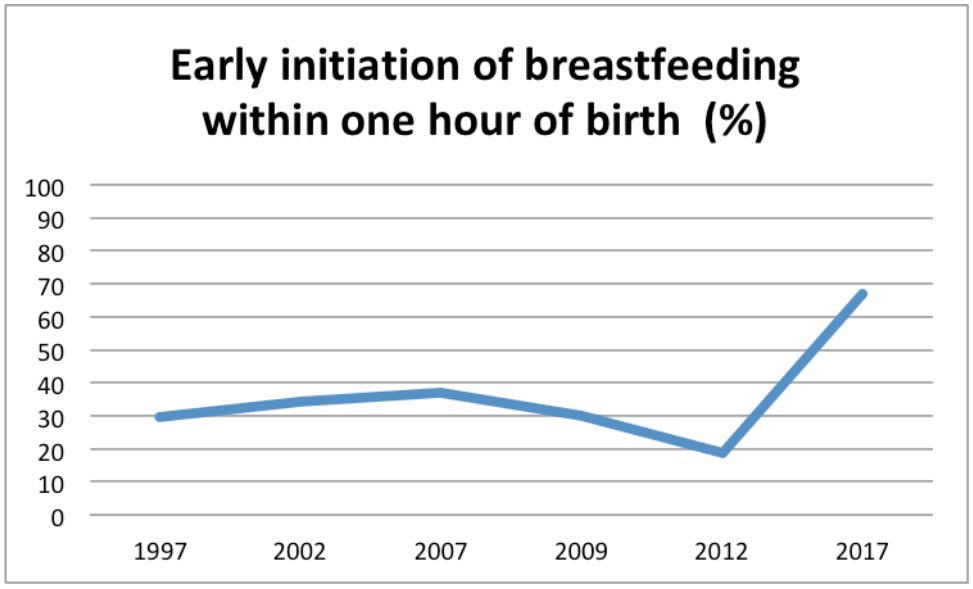


**Figure 9 Average rate (%) of early initiation of breastfeeding in Jordan from 1997 to 2017, based on data from UNICEF 2019**

In 1997, the rate of EIBF was 29.6%. There was an increase observable in 2002 to 34.5%.Then, by 2007 the rate further increased slightly to 37.2%. There was a drop to 30% in 2009, then a further drop to only 18.6% in 2012. The most recent data from 2017 showed an immense increase to 67.0%.

- **Morocco**: in 2003, the rate of EIBF was 48.0%. In the year 2010, the rate had dropped to 26.8%. The most recent data from 2017 showed an increase again to 42.6%.

- **Oman**:

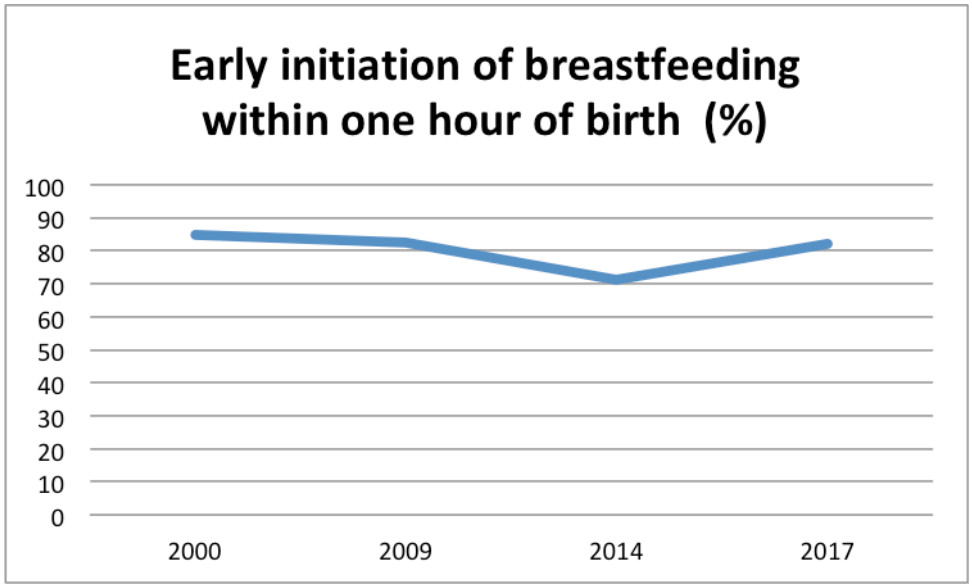


**Figure 10 Average rate of early initiation of breastfeeding in Oman from 2000 to 2017, based on data from UNICEF 2019**

In the year 2000, Oman had an impressive EIBF rate of 84.8%. In 2009, the rate was still relatively high at 82.6% but there was a drop in 2014 to 71.1%. However, in 2017, the rate of EIBF was back up at 82.0%, which is the highest in the region.

- **Palestine**: in 2006, the rate of EIBF was 64.6%. In 2010, there was a slight decrease to 61.5%. The most recent data from 2014 showed a further decrease to 40.8%.
- **Syria**: in 2006, the rate of EIBF was 32.4%. The most recent data from 2009 showed an increase to 45.5%.
- **Sudan**: the rate of EIBF dropped from 73.2% in 2010 to 68.7% in 2014.
- **Yemen**: in 1997, the rate of EIBF was 45.8%. This dropped to 29.6% in 2006. By the year 2013, the rate increased to 52.7%.

## Rates of continued breastfeeding in the EMR

**Table 9 Average rate (%) of continued breastfeeding in the countries of the EMR**

| Country | Continued Breastfeeding (12-15 months) % | Year of data source |
|---|---|---|
| **Iran** | 84.2 | 2010 |
| **Tunisia** | 45.4 | 2018 |
| **Kuwait** | 21.4 | 1996 |
| **Bahrain** | No information | |
| **Qatar** | 65.0 | 2012 |
| **United Arab Emirates** | 49.7 | 1995 |
| **Oman** | 80.0 | 2017 |
| **Saudi Arabia** | 58.9 | 1997 |
| **Egypt** | 80.0 | 2014 |
| **Jordan** | 36.2 | 2017 |
| **Lebanon** | 34.7 | 2000 |
| **Morocco** | 64.9 | 2017 |
| **Palestine** | 52.9 | 2014 |
| **Djibouti** | No information | |
| **Iraq** | 44.8 | 2018 |
| **Pakistan** | 69.6 | 2018 |
| **Sudan** | 89.4 | 2014 |
| **Afghanistan** | 78.4 | 2015 |
| **Somalia** | 60.8 | 2009 |
| **Syria** | 55.8 | 2009 |
| **Yemen** | 71.2 | 2013 |
| **Libya** | 39.3 | 1995 |

(United Nations Children's Fund, 2019)

Only countries with data available were included in the graph above.

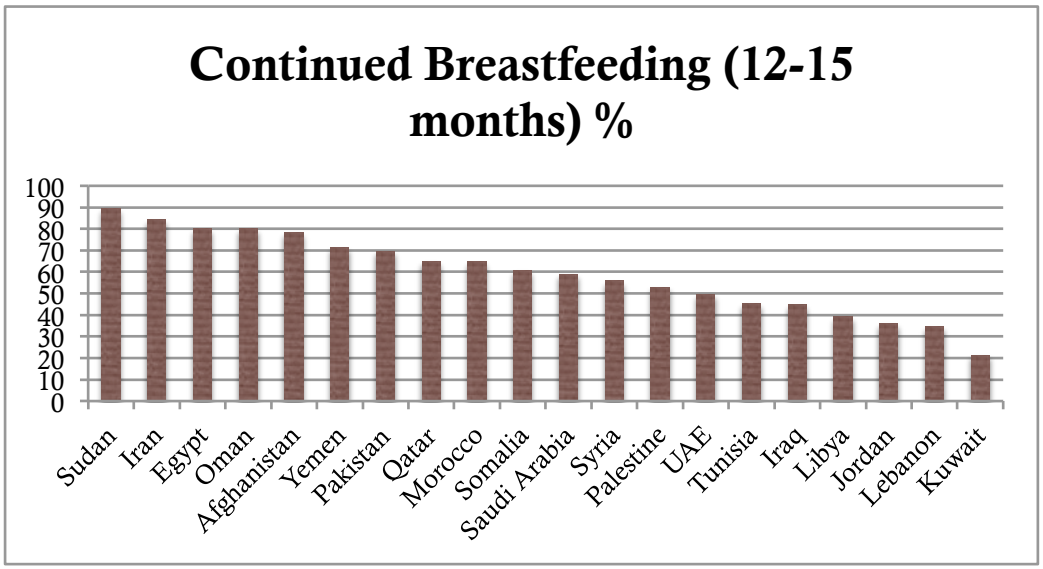


**Figure 11 Average rate (%) of continued breastfeeding in the countries of the EMR, based on data from UNICEF 2019**

The highest rate is observable in Sudan, with nearly 90%, followed by Iran, Egypt, Oman and Afghanistan. The lowest rate is observable in Kuwait. Lebanon, Jordan, Libya and Iraq, with rates under 45%.

## Trends in continued breastfeeding

For the following countries, data on continued breastfeeding (12-15 months) has been recorded on more than one occasion, in different years. For countries with more than 3 dates of data collection, graphs were created to illustrate the trends:

- **Egypt**:

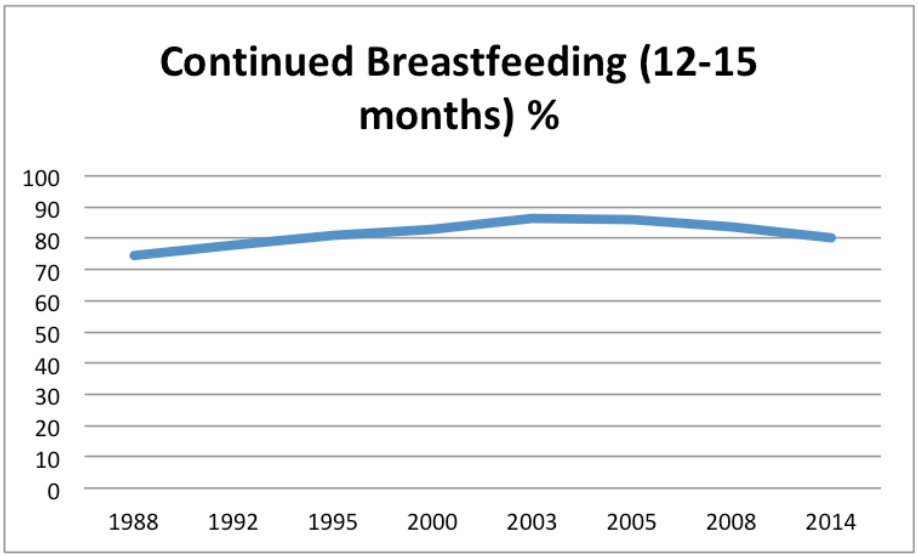


**Figure 12 Average rate (%) of continued breastfeeding in Egypt from 1998 to 2014, based on data from UNICEF 2019**

The earliest data on continued breastfeeding in Egypt is from 1988, when the rate was 74.5%. There was an increase observable in the next years: in 1992, it was 77.9%, in the year 1995, the rate was 80.8%, in 2000, the rate was 83.0%, in 2003 it was 86.4% and in 2005 it was 85.9%. Then in 2008 there was a slight decrease to 83.5% and in 2014 the rate was only 80.0%. Nevertheless, the most recent data is significantly higher than the oldest reported rate.

- **Iraq**:

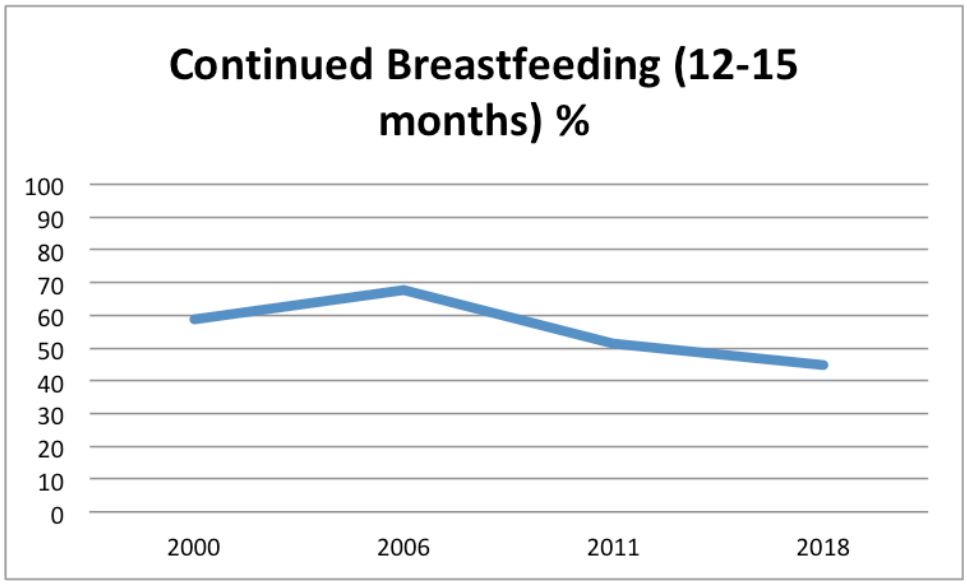


**Figure 13 Average rate (%) of continued breastfeeding in Iraq from 2000 to 2018, based on data from UNICEF 2019**

In the year 2000, the rate of continued breastfeeding was 58.6%. There was then an increase to 67.6% in 2006. By the year 2011, the rate of continued breastfeeding had decreased again to 51.5%. The most recent data from 2018 shows a further decrease to only 44.8%.

- **Jordan**:

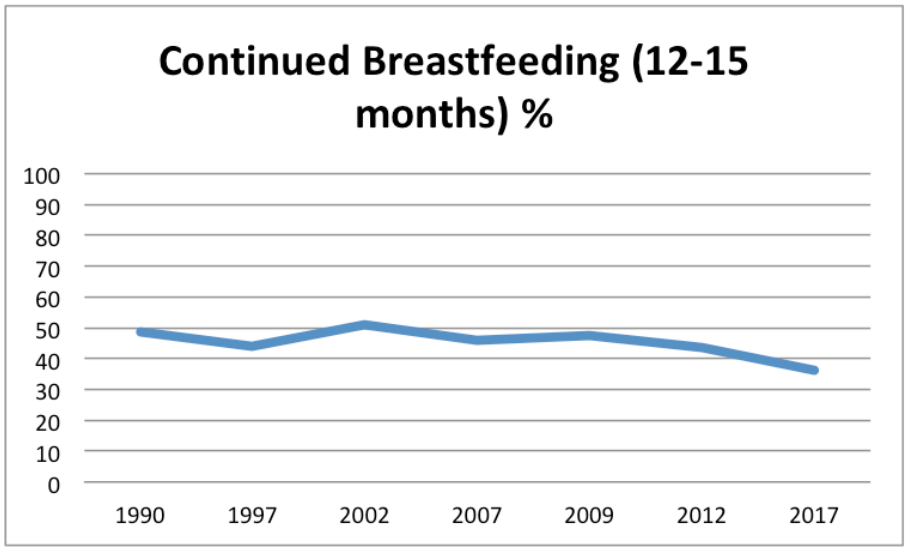


**Figure 14 Average rate (%) of continued breastfeeding in Jordan from 1990 to 2017, based on data from UNICEF 2019**

The earliest data from 1990 shows a rate of 48.6%, which decreased in 1997 to only 43.9%. In 2002, the rate increased to 51.1% but by 2007, this dropped again to only 46.0%. In 2009, the rate increased a bit to 47.7%. In 2012, there was a drop to 43.5% and by 2017, the rate was only 36.2%.

- **Morocco**:

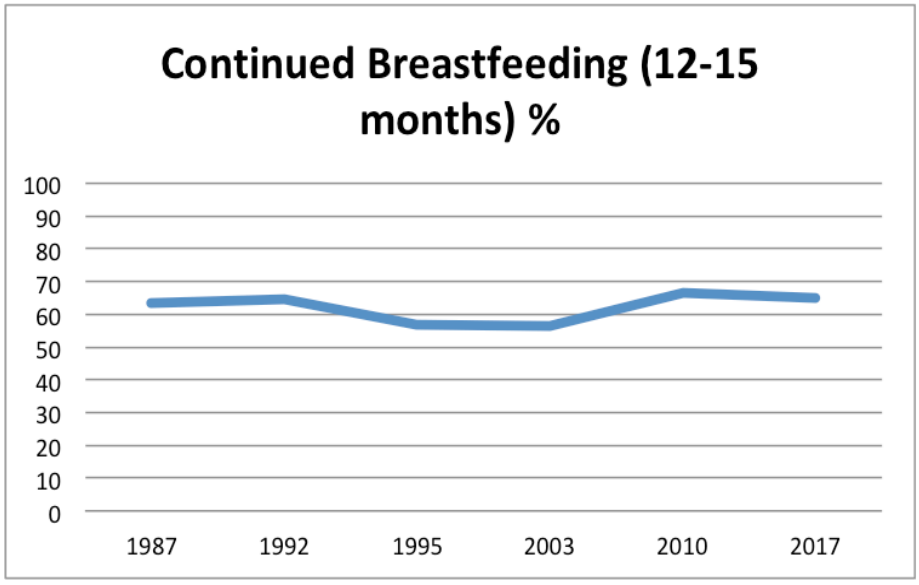


**Figure 15 Average rate (%) of continued breastfeeding in Morocco from 1987 to 2017, based on data from UNICEF 2019**

The earliest data on continued breastfeeding is from 1987, when the rate was 63.3%. The rate increased slightly to 64.6% by 1992. However, there was a

subsequent drop to 56.9% in 1995 and a minor further decrease to 56.5% in 2003. By 2010, the rate increased again to the highest it has ever been, which is 66.5% and in 2017 it was 64.9%. Despite the slight fluctuations, the rate of continued breastfeeding is slightly higher now than it was three decades ago.

- **Oman**: in the year 2000, the rate of continued breastfeeding in Oman was quite high at 95.0%. However, in 2014 the rate had dropped to 72.2%. By 2017, there was an increase again to 80.0%.
- **Pakistan**:

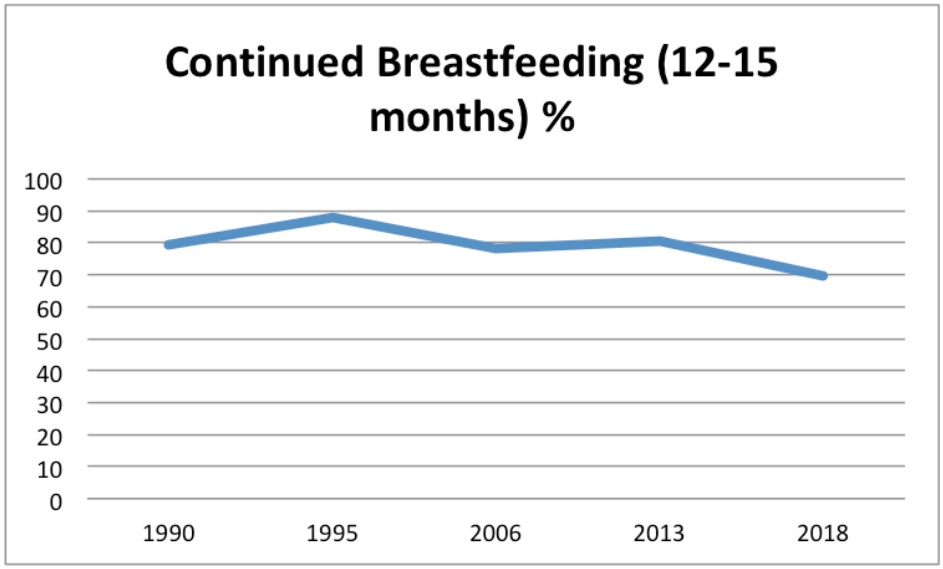


**Figure 16 Average rate (%) of continued breastfeeding in Pakistan from 1990 to 2018, based on data from UNICEF 2019**

In 1990, the rate of continued breastfeeding was 79.2%. This rate increased to 88.0% in 1995. In 2006, there was a drop back down to 78.3%. In the year 2013, there was another increase to 80.6% and the most recent data from 2018 shows a drop to only 69.6%.

- **Qatar**: there was a doubling of the rate of continued breastfeeding from only 32.1% in 1998 to 65.0% in 2012.
- **Somalia**: in 2000, the rate of continued breastfeeding was quite low at 26.6%. This number almost doubled to 50.2% in 2006. There was a further increase to 60.8% in 2014.
- **Palestine**: in 2006, the rate of continued breastfeeding was 60.0%. In 2010, this number dropped to 54.4% and further to 52.9% by 2014.

- **Sudan**: in 2010, the rate was already quite high at 87.6%, but it increased even more to 89.4% in 2014.
- **Syria**: in 2993, the rate of continued breastfeeding was 59.6%. This number increased to 63.9% by 2006, but dropped again to 55.8% in 2009.
- **Tunisia**:

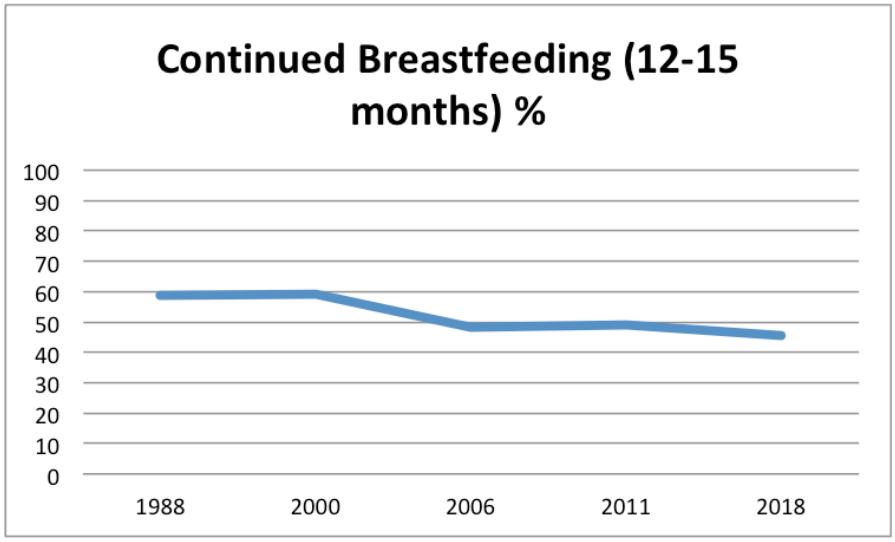


**Figure 17 Average rate (%) of continued breastfeeding in Tunisia from 1988 to 2018, based on data from UNICEF 2019**

The earliest data from 1988 shows a rate of continued breastfeeding of 58.8%. By the year 2000, the rate increased slightly to 59.1%. Then in 2006, there was a drop to 48.1%. The rate increased again slightly in 2011 to 49.2% and then dropped again to 45.4% in 2018. Despite the fluctuations, there is a steady decrease observable.

- **Yemen**:

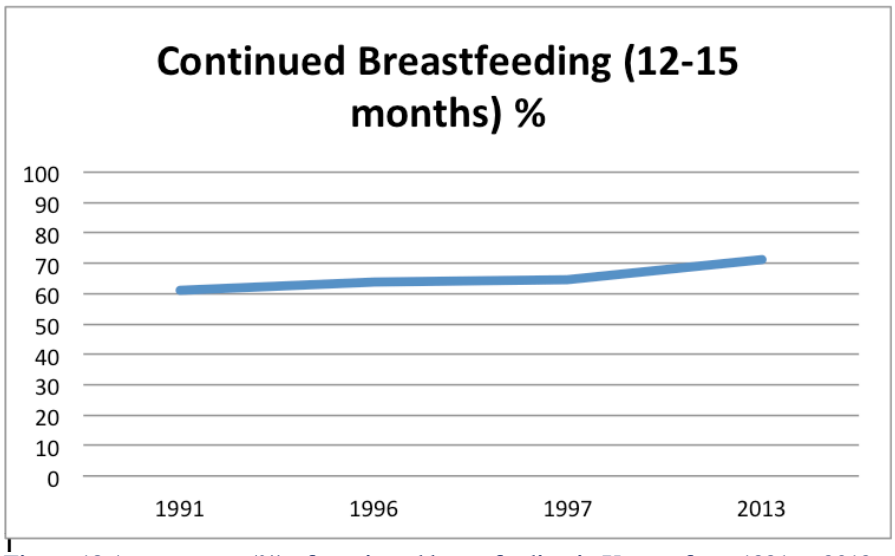


**Figure 18 Average rate (%) of continued breastfeeding in Yemen from 1991 to 2013, based on data from UNICEF 2019**

1991, the rate of continued breastfeeding was 61.1%. This rate increased a little bit to 63.7% in 1996. Only a year later, in 1997, the rate increased further to 64.5%. There is a large gap between 1997 and the most recent data from 2013, which showed an increase to 71.2%.

## Rates of newborns ever breastfed in the EMR

**Table 10 Average rate (%) of children ever breastfed in the countries of the EMR**

| Country | Ever breastfed (%) | Year of data source |
|---|---|---|
| **Iran** | 97.4 | 2010 |
| **Tunisia** | 92.2 | 2018 |
| **Kuwait** | No information | |
| **Bahrain** | No information | |
| **Qatar** | 94.6 | 2012 |
| **United Arab Emirates** | 93.2 | 1995 |
| **Oman** | 96.1 | 2017 |
| **Saudi Arabia** | No information | |
| **Egypt** | 95.7 | 2014 |
| **Jordan** | 91.7 | 2017 |
| **Lebanon** | 89 | 2004 |
| **Morocco** | 97.1 | 2017 |
| **Palestine** | 96.6 | 2014 |
| **Djibouti** | 91.1 | 2012 |
| **Iraq** | 93.3 | 2018 |
| **Pakistan** | 94.3 | 2018 |
| **Sudan** | 95.6 | 2014 |
| **Afghanistan** | 98.6 | 2018 |
| **Somalia** | 93.2 | 2006 |
| **Syria** | 93.2 | 2009 |
| **Yemen** | 96.7 | 2013 |
| **Libya** | No information | |

(United Nations Children's Fund, 2019)

Children 'ever breastfed' refers to children under 2 years, as per the definition of UNICEF/WHO.

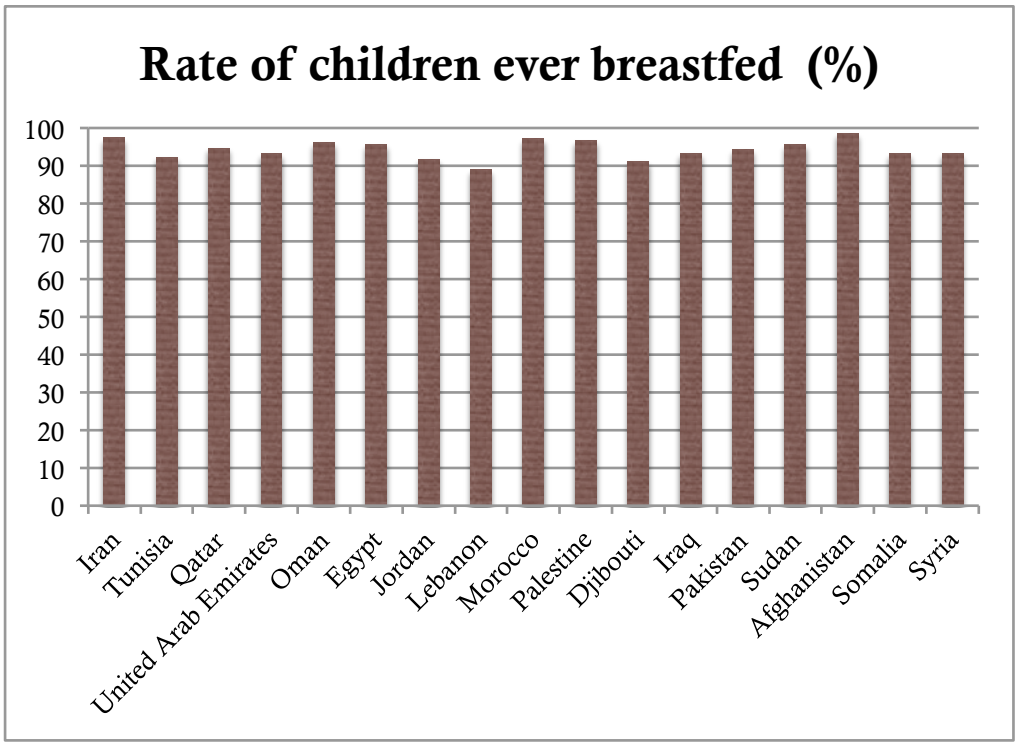


**Figure 19 Average rate (%) of children ever breastfed in the countries of the EMR, based on data from UNICEF 2019**

The lowest rate of ever breastfed is in Lebanon, with 89%. The highest rate is Afghanistan with 98.6%, followed closely by Iran with 97.4%.

### Trends in rates of children ever breastfed

For the following chapter, no graphs were included, because the differences in percentages are very minimal.

- **Afghanistan**: In Afghanistan, the rate of children ever breastfed increased slightly from 97.8% in 2015 to 98.6% in 2018.
- **Egypt**: In Egypt, the rate of children fluctuated between the earliest recordings from 1988 (93.6%) and the earliest data from 2014 (95.7%). Overall, a slight positive trend can be observed.
- **Iraq**: Unfortunately, the rate of children ever breastfed fell slightly from 96% in the year 2000 to 93.3% in 2018.
- **Jordan**: In Jordan, quite a substantial negative trend can be observed from 95.3% in 1990 to only 91.7% in 2017.
- **Morocco**: In Morocco, a positive trend is noticeable from 94.9% in 1987 to 97.1% in 2017.

- **Oman**: Between the years of 2000 and 2014, the rate of children ever breastfed remained quite high, at 98.8% and 98.0%, respectively. In 2017, however, the rate decreased to 96.1%.
- **Pakistan**: A very optimistic and steady increase can be seen from only 89% in 1995 to 94.3% in 2018. This is still lower than the 95%, which was recorded in the earliest data from 1991, but it is a positive trend, nevertheless.
- **Palestine**: There was a slight increase from 97.5% in 2006 to 98.5% in 2010. The most recent data from 2014 shows a slight decrease again, to 96.6%.
- **Syria**: A small decrease can be observed from 94% in 2006 to 93.2% in 2009.
- **Tunisia**: From 1988 up until 2011, the rate of children ever breastfed remained steady at 96.3% and 96.6% respectively. However, in 2018 there was a drop to only 92.2%.
- **Yemen**: A steady increase can be observed from 94% in 1991 to 96.9% in 1997, then in 2006 the rate was 97% and finally, the most recent data from 2013 shows a rate of 96.7%.

## Complimentary feeding patterns

Indicators:

- Minimum Acceptable Diet: Percentage of children 6-23 months of age who received a minimum acceptable diet, so they were fed both the minimum number of meals/snacks, as well as food from the minimum number of food groups. In addition, non-breastfed children are required to have received the minimum number of milk feeds in the previous day.
- Minimum Diet Diversity: Percentage of children 6-23 months of age who received a minimum diet diversity, meaning that they were fed at least 5 (out of 8) food groups the previous day
- Minimum Meal Frequency: Percentage of children 6-23 months of age who were fed the minimum number of meals/snacks during the previous day

Minimum is defined as 2 times solid, semi-solid or soft foods for breastfeed infants 6-8 months of age; 3 times solid, semi-solid or soft foods for breastfed children 9-23 months of age; and 4 times solid-semi-solid or soft foods and/or milk feeds for non-breastfed children 6-23 months of age.

Out of the 22 countries in the EMR, data on complimentary feeding patterns is only available for 9, so a meaningful comparison within the region is not possible. The data can be seen in the appendix.

## Country Profiles

The following section will include brief country profiles for the 22 countries of the Eastern Mediterranean region, as defined by the WHO, regarding breastfeeding practices and maternity leave. Unfortunately, recent data is not available for all of these countries. The focus is mainly on the rate of exclusive breastfeeding because it is the single most effective intervention to improve an infant's chance of survival. (Jawaldeh, 2019) Other parameters used by the WHO are also included: continued breastfeeding and early initiation of breastfeeding. The number of baby-friendly hospitals in each country is also mentioned.

### Afghanistan:

The rate of exclusive breastfeeding is 57.5%, which is the highest in the region. The rate of EIBF is 62.8%.The rate of continued breastfeeding (12-15 months) is 78.4%. The rate of newborns ever breastfed is 98.6%, which is also the highest in the region. (United Nations Children's Fund, 2019)

Although the rate of continued breastfeeding may seem high, in combination with suboptimal complementary feeding practices and high bottle feeding rate (including herbal drinks), the country is still battling malnutrition in children and problems with communicable disease. The average duration of breastfeeding is 23.7 months, reflecting the importance of breast milk in supporting nutrition in rural and poorer areas. Stunting and wasting are highest at ages 24-35 months and 36-48 months, which is after children stop being breastfed. (Jawaldeh, 2019)

Most women in Afghanistan are housewives and do not work in the governmental or private sector. Many girls still get married before the age of 15 (15.2%), before they reach full maturity, while approximately 46.3% of girls get married before they are 18 years of age. Due to the high illiteracy rate in Afghani women, they are vulnerable to

misinformation and marketing products of products, which discourage breastfeeding. (Jawaldeh, 2019) There are 18 baby-friendly hospitals in Afghanistan. (Al-Jawaldeh & Abul-Fadl, 2018)

The international code of marketing of breast-milk substitutes is implemented fully in Afghanistan. (WHO, 2018)

### Bahrain:

No information is given in the UNICEF database on exclusive breastfeeding, early initiation of breastfeeding, rate of newborns ever breastfed or continued breastfeeding for Bahrain. (United Nations Children's Fund, 2019)

Although one quarter of women in Bahrain have jobs, the maternity leave is only 45 days with full payment. Although women are highly educated and represented in all major professions, the short maternity leave interferes with the continuity of breastfeeding practices. The employer pays for the maternity leave and women cannot be dismissed while on maternity leave. (Jawaldeh, 2019) There are 6 baby-friendly hospitals in Bahrain. (Al-Jawaldeh & Abul-Fadl, 2018)

The international code of marketing of breast-milk substitutes is implemented fully in Bahrain. (WHO, 2018)

### Djibouti:

The rate of exclusive breastfeeding in Djibouti is extremely low, in comparison to other countries, with only 12.4%. Overall, early initiation of breastfeeding is 52%. (United Nations Children's Fund, 2019) This is higher in rural areas (64.6%) than in urban areas (47.8%). Early initiation of breastfeeding is also higher in illiterate mothers (53.7%) than in mothers with primary education (49.8%). Since literacy rate among females in Djibouti is low (58%) and not many women receive secondary education, no data has been reported for mothers with secondary or higher education. Women are entitled to a total of 14 weeks of paid maternity leave, 8 weeks before birth and 6 weeks after birth. During the first 12 months after maternity leave, female employees are entitled to 1 hour per working day to breastfeed her child. (Jawaldeh, 2019) There are 4 baby-friendly hospitals in Djibouti. (Al-Jawaldeh & Abul-Fadl, 2018) No information is

available in the UNICEF database on the rate of continued breastfeeding in Djibouti. The rate of newborns ever breastfed is quite low in comparison to other countries in the region, at 91.1%. (United Nations Children's Fund, 2019)

Few provisions of law are implemented in Djibouti, in terms of the international code of marketing of breast-milk substitutes. (WHO, 2018)

## Egypt:

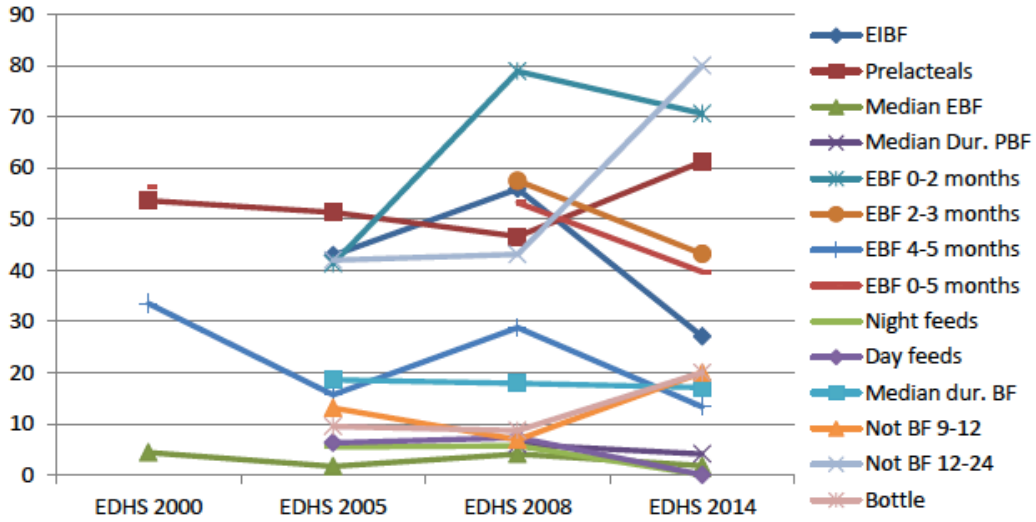


**Figure 20 Patterns of breastfeeding in Egypt**

(Jawaldeh, 2019)

The data above is from the Egyptian demographic health study (EDHS). Despite the intensive efforts of the ministry of health to promote breastfeeding, rates of exclusive breastfeeding are quite low, at an average of 39.5%. Most notably, as demonstrated in the figure above, the rate of early initiation of breastfeeding has decreased dramatically since 2008, while bottle-feeding is becoming more common. The rate of EIBF in Egypt is currently quite low at 27.1%.

In the majority of cases, the following reasons were given for failure of breastfeeding: complicated delivery, breast difficulties, insufficient breast milk, prematurity, infant refusal, infant illness and excessive crying.

Mothers in Egypt are entitled to 3-4 months of fully paid maternity leave. Additionally, they are allowed to take a one-hour break to breastfeed per working day. Furthermore, workplaces with more than 99 female employees should have a nursery within or close to the workplace. (Jawaldeh, 2019) There are 13 baby-friendly hospitals in Egypt. (Al-Jawaldeh & Abul-Fadl, 2018) The rate of continued breastfeeding (12-15 months) is quite high at 80%. The rate of newborns ever breastfed is 95.7%. (United Nations Children's Fund, 2019)

Many provisions of law are implemented in Egypt, in terms of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Iran:

Iran has the highest number of baby-friendly hospitals out of all the countries in the EMR. (Al-Jawaldeh & Abul-Fadl, 2018) The exclusive breastfeeding rate in Iran is 53.1%, according to the most recent data from 2010, which is an increase from the 44.1% observed in the year 2000. Iran has the second highest rate of EIBF (tied with Sudan) at 68.7%. Iran also has the second highest rate of continued breastfeeding (12-15 months) at 84.2%. 97.4% is the rate of newborns ever breastfed, which is also the second highest in the region. (United Nations Children's Fund, 2019) In 2007, the paid maternity leave for breastfeeding women working in the public sector was extended from 16 to 24 weeks. This extension had a positive effect on the EBF rate, which increased. In the private sector, however, women are only granted 90 days of maternity leave. The maternity leave is partially paid (66.7%) by the Social Security fund. Iran is the first country in the EMR to extend maternity leave to 6 months in order to encourage women to exclusively breastfeeds. (Jawaldeh, 2019) Few provisions of law are implemented in Iran, in terms of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Iraq:

According to the most recent data on exclusive breastfeeding, the rate is 25.8%. The rate of EIBF is 32.4%.The average rate of continued breastfeeding (12-15 months) is 44.8%. The rate of newborns ever breastfed in Iraq is 94.4%. (United Nations Children's Fund, 2019)

Mothers in Iraq are entitled to a total of 14 weeks fully paid maternity leave after delivery. Due to the political instability of the country, families are frequently moving to camps with unhygienic living conditions. Due to this, UNICEF released a statement, which urges the country to reject free donation of milk formula and encourages mothers to breastfeed. The risk of diarrhea, resulting in dehydration, is very high for infants, who are fed with milk formula that is prepared with unsafe water. (Jawaldeh, 2019) There are currently 15 baby-friendly hospitals in Iraq. (Al-Jawaldeh & Abul-Fadl, 2018)

Few provisions of law are implemented in Iraq, in terms of the international code of marketing of breast-milk substitutes. (WHO, 2018)

## Yemen:

The rate of exclusive breastfeeding up to 6 months of age has decreased steadily from 17.8% in 1997 to 11.5% in 2003 and only 9.7% in 2013. However, it was already quite low in 1991 with only 13.1%. A pregnant woman is entitled to 70 days of fully paid maternity leave, which is paid by her employer. After delivery, a mother is entitled to 60 days of maternity leave, also paid for by her employer. If the birth is difficult or she has twins, an extra 20 days can be granted. (Jawaldeh, 2019)

Unfortunately, there are currently no baby-friendly hospitals in Yemen. (Al-Jawaldeh & Abul-Fadl, 2018) The rate of EIBF in Yemen is 52.7%. The rate of continued breastfeeding (12-15 months) is 71.2%. The rate of newborns ever breastfed is 96.7%. (United Nations Children's Fund, 2019)

The international code of marketing of breast-milk substitutes is implemented fully in Yemen. (WHO, 2018) There is no baby-friendly hospital in Yemen. (Al-Jawaldeh & Abul-Fadl, 2018)

## Saudi Arabia:

There is conflicting data available on the rates of exclusive breastfeeding (0-5 months), ranging from 68.7% to only 13.6%. (Jawaldeh, 2019) In another report, exclusive breastfeeding rate could also not be accurately determined, as there was a range from 0.8% to 43.9%, because of lack of clear definitions and the nature of study design. (Al Juaid, Binns, & Giglia, 2014) In the UNICEF Expanded Global Databases on exclusive breastfeeding, there is no data listed for Saudi Arabia.

Mothers are granted 10 weeks of maternity leave with either full or 50% pay, depending on the employer. In the last couple of years, women in Saudi Arabia have started receiving more education and are increasingly joining the workforce. Policies, which allow women to breastfeed at work, significantly improve breastfeeding continuity. (Jawaldeh, 2019) There are an impressive 60 baby-friendly hospitals in Saudi Arabia. (Al-Jawaldeh & Abul-Fadl, 2018) There is no information on the rate of EIBF. The most recent data on continued breastfeeding (12-15 months) in Saudi Arabia is from

1997 and shows a rate of 58.9%. No information is given on the rate of newborns ever breastfed. (United Nations Children's Fund, 2019)

Many provisions of law are implemented in Saudi Arabia, in terms of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Qatar:

29.3% of women exclusively breastfeed in Qatar. The rate of EIBF is 33.5%.The rate of continued breastfeeding (12-15 months) is 65%. The rate of newborns ever breastfed is 94.6%. (United Nations Children's Fund, 2019) Qatari women are entitled to 40 to 60 days of maternity leave, which is fully paid for by the Agency of Civil servants. The following factors are linked to early cessation of breastfeeding in Qatar: receiving breast milk substitutes, exposure to advertisements and employment status. (Jawaldeh, 2019) Almost all newborns are ever breastfeed, while only around 29.3% of babies are exclusively breastfed up to the age of 6 months. (Multiple Indicator Cluster Survey (MICS) : 2012 Doha – Qatar, 2014) Unfortunately, there are no baby-friendly hospitals in Qatar. (Al-Jawaldeh & Abul-Fadl, 2018)

No legal measures are in place to implement the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Oman:

The rate of exclusive breastfeeding in Oman is 23.2%. Early initiation of breastfeeding in the first hour after birth occurs at 82% of newborns, which is the highest in the region. The rate of continued breastfeeding (12-15 months) is quite high, at 80%. The rate of newborns ever breastfed in Oman is 96.1%. (United Nations Children's Fund, 2019) In the public sector, women receive 60 days of fully paid maternity leave, while 50 days are granted in the private sector. This is the case for both expats and locals and is paid for by the employer. (Jawaldeh, 2019) There are quite a lot of baby-friendly hospitals in Oman, 51 to be exact. (Al-Jawaldeh & Abul-Fadl, 2018)

In terms of implementation of the international code of marketing of breast-milk substitutes, Oman only has few provisions in law. (WHO, 2018)

### Kuwait:

The most recent data on continued breastfeeding is from 1996 and shows the lowest rate in the region, which is 21.4%. There is no information available to UNICEF on exclusive breastfeeding, newborns ever breastfed or early initiation of breastfeeding. (United Nations Children's Fund, 2019) However, according to a report by UNICEF/WHO, the rate of early initiation of breastfeeding was 32% in 2015 and for exclusive breastfeeding it was only 4%. (WHO/UNICEF, 2017a) Due to being a high-income country, Kuwait is being aggressively targeted by infant milk formula companies. Overweight and obesity are an issue in children under the age of 5 in Kuwait. The majority of mothers only attempt breastfeeding for the first time 24 hours after delivery, or even later, although almost all women initiate breastfeeding before being discharged from the hospital. (Jawaldeh, 2019) There is only 1 baby-friendly hospital in Kuwait. (Al-Jawaldeh & Abul-Fadl, 2018)

The international code of marketing of breast-milk substitute is fully implemented. (WHO, 2018)

### Syria:

According to data from the year 2009, 42.6% of women breastfeed exclusively. Data from the same year shows a rate of EIBF of 45.5%. The rate of continued breastfeeding (12-15 months) is 55.8%. The rate of newborns ever breastfed is 93.2%. (United Nations Children's Fund, 2019) Unfortunately, because of the ongoing conflicts and migration, there is no data available for the past decade. (Jawaldeh, 2019) There are 21 baby-friendly hospitals in Syria. (Al-Jawaldeh & Abul-Fadl, 2018)

Many provisions in law are in place to implement the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Palestine:

The rate of exclusive breastfeeding in Palestine is 38.1%. The rate of EIBF is 40.8%. The rate of continued breastfeeding (12-15 months) is 52.9%. The rate of newborns ever breastfed is 96.6%. (United Nations Children's Fund, 2019) Both in rural and urban areas, early initiation of breastfeeding has decreased from 2006 to 2014. The rate of

continued breastfeeding has also declined in the past decade. Since there are currently no baby-friendly hospitals in Palestine, this is an area where improvement in breastfeeding practices can be made possible. (Jawaldeh, 2019)

No information is available on the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Lebanon:

There is no information available on the exclusive breastfeeding rate in Lebanon. The most current data on EIBF in Lebanon is from 2004 and shows a rate of 41.3%. The rate of continued breastfeeding (12-15 months) is 34.7%, which is quite low, comparatively. The rate of newborns ever breastfed is the lowest in Lebanon, in comparison to the other countries of the region, at only 89%. (United Nations Children's Fund, 2019) In 2008, Lebanon adopted the International Code for Marketing of Breast Milk Substitute. Hospitals, which did not adhere to the rules of the code, have been publicly prosecuted. Some personal concerns, like weight gain, have been mentioned by Lebanese women as deterring factors. There is also the perception that skinny women cannot produce enough milk for their newborn. (Jawaldeh, 2019) There are 21 baby-friendly hospitals in Lebanon. (Al-Jawaldeh & Abul-Fadl, 2018)

The international code of marketing of breast-milk substitutes is fully implemented in Lebanon. (WHO, 2018)

### Jordan:

The rate of exclusive breastfeeding in Jordan is 25.4%. The current rate of EIBF is 67.0%. The rate of continued breastfeeding (12-15 months) is quite low, at 36.2%. The rate of newborns ever breastfed is 91.7%. (United Nations Children's Fund, 2019) Jordanian women are granted 10 weeks of fully paid maternity leave. Employed women are less likely to fully breastfeed compared to unemployed women. In recent years (since 2012), positive trends are observable both for exclusive breastfeeding and early initiation of breastfeeding. (Jawaldeh, 2019) Jordan has a total of 3 baby-friendly hospitals. (Al-Jawaldeh & Abul-Fadl, 2018)

Few provisions in law are available for the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Tunisia:

The rate of EBF is quite low in Tunisia, at 13.5%. The rate of EIBF is 31.6%. The rate of continued breastfeeding (12-15 months) is 45.4%. The rate of newborns ever breastfed is 92.2%. (United Nations Children's Fund, 2019) In the public sector, maternity leave was recently increased from 2 to 3 months and 15 days of parental leave was also granted. Women are entitled to 1 hour of breastfeeding rest per working day. In the private sector, women are granted 30 days of paid maternity leave with 1 hour of breastfeeding rest per day in the first year after giving birth. (Jawaldeh, 2019) Tunisia has the second highest number of baby-friendly hospitals in the EMR, which is 141. (Al-Jawaldeh & Abul-Fadl, 2018)

Many provisions in law are in place for the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Sudan:

In Sudan, 54.6% is the EBF rate, which is the second highest in the EMR. The rate of EIBF is 68.7%, which is the also the second highest in the region, tied with Iran. The rate of continued breastfeeding (12-15 months) is the highest in the region, at 89.4%. The rate of newborns ever breastfed is 95.6%. (United Nations Children's Fund, 2019) The literacy rate for women in Sudan is quite low in comparison to males and only around a third of women in working age are part of the labor force. Poverty is an influencing factor in Sudan when it comes to feeding practices. Education of women can play a main role in improving appropriate feeding practices of infants. (Jawaldeh, 2019) There are 25 baby-friendly hospitals in Sudan. (Al-Jawaldeh & Abul-Fadl, 2018)

Few provisions in law are in place for the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Somalia:

The rate of exclusive breastfeeding in Somalia is the lowest in the whole EMR, at 5.3%. The rate of early initiation of breastfeeding is only 23.4%. The rate of continued breastfeeding (12-15 months) is 60.8%. However, this data is from 2009 and might not

be current anymore. The rate of newborns ever breastfed is 93.2%. (United Nations Children's Fund, 2019) Malnutrition in children is a major issue in Somalia, due to ongoing conflicts and violence, together with droughts and floods. (Ministries of Health Puntland State and Somaliland Republic, 2017) Somalia has 0 baby-friendly hospitals. (Al-Jawaldeh & Abul-Fadl, 2018)

No legal measures are in place for the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

Somalia has a very low rate of exclusive breastfeeding, despite battling malnutrition and children. The implementation of the BFHI and the international code of marketing of breast-milk substitutes can be seen as opportunities to improve the extremely low EBF rate.

### Morocco:

35% of infants in Morocco are exclusively breastfed. The rate of early initiation of breastfeeding is 42.6%. The rate of continued breastfeeding (12-15 months) is 64.9%. The rate of newborns ever breastfed is 97.1%, which is the third highest in the EMR. (United Nations Children's Fund, 2019) The national social security fund fully pays for 14 weeks of maternity leave. Unfortunately, the numbers of baby-friendly hospitals in Morocco have fallen immensely in recent years. To improve the early initiation of breastfeeding rates, it would be helpful to bring the number of baby-friendly hospitals back up. (Jawaldeh, 2019) There are 17 baby-friendly hospitals in Morocco. (Al-Jawaldeh & Abul-Fadl, 2018)

No legal measures are in place for the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Libya:

There is no current information on the rate of exclusive breastfeeding or early initiation of breastfeeding. The most recent data on continued breastfeeding is from 1995, when the rate was 39.3%. There is also no information on newborns ever breastfed. (United Nations Children's Fund, 2019) Women in Libya have 6 weeks of compulsory leave after giving birth and 14 weeks of fully paid maternity leave. High numbers in both

stunting and obesity in children are worrying. (Jawaldeh, 2019) There is no baby-friendly hospital in Libya. (Al-Jawaldeh & Abul-Fadl, 2018)

No legal measures are in place for the implementation of the international code of marketing of breast-milk substitutes. (WHO, 2018)

### Pakistan:

The rate of EBF in Pakistan is 47.5%. The rate of EIBF is the lowest in the EMR, which is only 19.6%. The rate of continued breastfeeding (12-15 months) is 69.6%. The rate of newborns ever breastfed is 94.3%. (United Nations Children's Fund, 2019)There is little support for women trying to breastfeed at their workplace in Pakistan. Furthermore, many mothers are not educated on the benefits of breastfeeding or how to maintain lactation. There are 75 baby-friendly hospitals in Pakistan and the rate of early initiation of breastfeeding is much higher there than in normal hospitals. (Jawaldeh, 2019) There are 42 baby-friendly hospitals in Pakistan. (Al-Jawaldeh & Abul-Fadl, 2018)

For the implementation of the international code of marketing of breast-milk substitutes, full provisions in law are in place. (WHO, 2018)

### United Arab Emirates:

Unfortunately, there is little data on breastfeeding in the UAE available. However, childhood obesity is a known issue in this country. The most recent data on continued breastfeeding in the UAE is from 1995, when the rate was 49.7%. (United Nations Children's Fund, 2019)The rate of newborns ever breastfed was 93.2% in 1995. (Jawaldeh, 2019) There are 15 baby-friendly hospitals in the UAE. (Al-Jawaldeh & Abul-Fadl, 2018)

The most recent data on early initiation on breastfeeding is from 1995 and shows a low rate of 23.2%. (United Nations Children's Fund, 2019)

For the international code of marketing of breast-milk substitutes, no dedicated legislation is available, but code-related provisions are incorporated in other legal measures. (WHO, 2018)

## Comparison of countries in the Eastern Mediterranean Region

There is a large disparity of exclusive breastfeeding practices between the countries of the EMR. A quarter of the countries, where recent data is available, have EBF rates below 20%. Since exclusive breastfeeding is the most effective intervention to improve the survival of infants, the incidence of it should really be increased in all countries, especially in the ones with rates lower than 20%. (Al-Jawaldeh & Abul-Fadl, 2019) The WHO target for the year 2025 is 50% of newborns being breastfed exclusively. At the moment, according to the data available, only Iran, Sudan and Afghanistan reach this goal in the EMR, closely followed by Pakistan. The average rate of exclusive breastfeeding in the EMR is 32%. Somalia and Yemen have very low exclusive breastfeeding rates, which brings down the average. The average rate of EIBF in the EMR is 45.3%. The highest rates are in Oman, Sudan, Iran and Afghanistan, and the lowest rates are in Pakistan, the UAE and Somalia. For continued breastfeeding, the average rate in the region is 59.1%, with the highest rates in Sudan, Iran, Egypt, Oman and Afghanistan and the lowest rates in Kuwait, Lebanon, Jordan and Libya. The average rate of children ever breastfed is 94.4%. The rates of the various countries are very similar, however, the highest rates are in Afghanistan, Iran and Morocco. The lowest rates are in Lebanon, Djibouti and Lebanon.

Iran, Oman and Afghanistan are amongst the countries with the highest rates for most parameters. Iran also has the highest number of baby friendly hospitals in the area, which could be a reason for the positive rates.

Somalia has low rates for several parameters, which could be due to an absence of legal measures in place for the implementation of the international code of marketing of breast-milk substitutes and because there are no baby-friendly hospitals in Somalia.

## The relationship between wealth and breastfeeding

The following income groupings are defined by the World Bank and are revised every 12 months. The newest definitions, which are used here, are from July 2019 and are valid until July 2020. The group of countries, which are assigned to new income groups due to this change in classification, does not include any countries of the EMR. The World Bank classifications use GNI per capita as the measurement tool and are as follows:

- Low income: $1,025 or less
- Lower-middle income: $1,026-$3995
- Upper-middle income: $3,996-$12,375
- High-income: $12,376 or more

## World Bank income groupings of the countries in the EMR

**Table 11 Income groupings and average rates (%) of breastfeeding parameters of countries in the EMR**

| Country | Income group | EBF (%) | EIBF (%) | CB (%) |
|---|---|---|---|---|
| **Iran** | Upper-middle income | 53.1 | 68.7 | 84.2 |
| **Tunisia** | Lower-middle income | 13.5 | 31.6 | 45.4 |
| **Kuwait** | High-income | No information | No information | 21.4 |
| **Bahrain** | High-income | No information | No information | No information |
| **Qatar** | High-income | 29.3 | 33.5 | 65 |
| **United Arab Emirates** | High-income | No information | 23.2 | 49.7 |
| **Oman** | High-income | 23.2 | 82 | 80 |
| **Saudi Arabia** | High-income | No information | No information | 58.9 |
| **Egypt** | Lower-middle income | 39.5 | 27.1 | 80 |
| **Jordan** | Upper-middle income | 25.4 | 67 | 36.2 |
| **Lebanon** | Upper-middle income | No information | 41.3 | 34.7 |
| **Morocco** | Lower-middle income | 35 | 42.6 | 64.9 |
| **Palestine** | Lower-middle income | 38.1 | 40.8 | 52.9 |
| **Djibouti** | Lower-middle income | 12.4 | 52 | No information |
| **Iraq** | Upper-middle income | 25.8 | 32.4 | 44.8 |
| **Pakistan** | Lower-middle income | 47.5 | 19.6 | 69.6 |
| **Sudan** | Lower-middle income | 54.6 | 68.7 | 89.4 |
| **Afghanistan** | Low-income | 57.5 | 62.8 | 78.4 |
| **Somalia** | Low-income | 5.3 | 23.4 | 60.8 |
| **Syria** | Low-income | 42.6 | 45.5 | 55.8 |
| **Yemen** | Low-income | 9.7 | 52.7 | 71.2 |
| **Libya** | Upper-middle income | No information | No information | 39.3 |

The income groupings above are based on the classifications of the World Bank. It is notable, that the majority of wealth in the Eastern Mediterranean region is concentrated in the Gulf countries, due to the oil reserves. These countries also share a similar culture. Therefore, when analyzing a potential relationship between income level and breastfeeding parameters, the immeasurable influence of culture needs to be kept in mind as a confounding variable.

Another limitation is the fact that, while some of the data on rates of breastfeeding parameters is quite old; the income group might have changed over time as well. This affects newly rich countries, like the UAE, where the newest data available is from the 1990s, whereas the tourism boom of the last decade caused both a spike in wealth, as well as westernization of the culture. On the other side of the spectrum, countries like Sudan, Yemen and Syria are experiencing economic losses due to war.

The following tables used the data presented in the table above:

**Table 12 Average rate (%) of EBF in the different income groupings in the EMR**

| World Bank income grouping aggregates | Average rate of EBF (%) |
|---|---|
| **All groupings** | 32 |
| **Low-income** | 29 |
| **Lower-middle income** | 31 |
| **Upper-middle income** | 35 |
| **High-income** | 26 |

In the table above, it is evident that the average rate of exclusive breastfeeding is lowest in high-income countries, followed closely by low-income countries.

Table 13 Average rate (%) of EIBF in the different income groupings in the EMR

| World Bank income grouping aggregates | Average rate of EIBF (%) |
|---|---|
| **All groupings** | 45 |
| **Low-income** | 46 |
| **Lower-middle income** | 40 |
| **Upper-middle income** | 52 |
| **High-income** | 46 |

As can be seen above, the lowest rate of early initiation of breastfeeding is in lower-middle income countries.

Table 14 Average rate (%) of CB in the different income groupings in the EMR

| World Bank income grouping aggregates | Average rate of CB (%) |
|---|---|
| **All groupings** | 59 |
| **Low-income** | 67 |
| **Lower-middle income** | 67 |
| **Upper-middle income** | 48 |
| **High-income** | 55 |

For the average rate of continued breastfeeding, the lowest rate is observable in upper-middle income countries

The following tables are included in the UNICEF databases. It should be noted that these comparisons are global and not limited to the Eastern Mediterranean region:

**Table 15 Average rate (%) of EBF in the different income groupings globally**

| World Bank income grouping aggregates | Years | Rate (%) of exclusive breastfeeding |
|---|---|---|
| **Low Income** | 2013-2018 | 51 |
| **Lower Middle Income** | 2013-2018 | 47 |
| **Upper Middle Income** | 2013-2018 | 26 |
| **High Income** | 2013-2018 | -[1] |

(United Nations Children's Fund, 2019)

**Table 16 Average rate (%) of CB in the different income groupings globally**

| World Bank income grouping aggregates | Years | Rate (%) of continued breastfeeding (12-15 months) |
|---|---|---|
| **Low Income** | 2013-2018 | 88 |
| **Lower Middle Income** | 2013-2018 | 82 |
| **Upper Middle Income** | 2013-2018 | 35 |
| **High Income** | 2013-2018 | -[1] |

(United Nations Children's Fund, 2019)

**Table 17 Average rate (%) of EIBF in the different income groupings globally**

| World Bank income grouping aggregates | Years | Rate (%) of early initiation of breastfeeding |
|---|---|---|
| **Low Income** | 2013-2018 | 98 |
| **Lower Middle Income** | 2013-2018 | 96 |
| **Upper Middle Income** | 2013-2018 | -[1] |
| **High Income** | 2013-2018 | -[1] |

(United Nations Children's Fund, 2019)

For the rate of newborns ever breastfed, no data split by the different World Bank income grouping aggregates is given in the UNICEF/WHO expanded database.
For both exclusive breastfeeding and continued breastfeeding, an inverse correlation can be seen i.e. the rate seems to drop with an increase in income. For early initiation of breastfeeding, the rate is only listed for low and lower middle income, so such a relationship cannot be observed, but it is important to note that the rate is slightly higher in low income countries (by 2%) than in lower middle income countries.

The inverse relationship between wealth and breastfeeding, which is observable globally, cannot be observed in the Eastern Mediterranean region. However, the lack of data makes it impossible to draw meaningful comparisons.

It is noteworthy, however, that Somalia and Yemen have the lowest rates of exclusive breastfeeding (under 10%) in the region, while being some of the poorest countries with very high rates of malnutrition. Somalia also has a very low prevalence of EIBF.

## Breastfeeding in refugee camps

### Palestinian refugees:

The United Nations Relief and Works Agency for Palestine refugees in the Near East (UNRWA) provide healthcare services in refugee camps.

Several studies have shown that, while breastfeeding was a common practice in Palestinian refugee camps, exclusive breastfeeding was practiced less frequently. A cross-sectional study investigated the breastfeeding patterns among Palestinian infants in the first 6 months in 3 refugee camps in Nablus in 2007. The rate of exclusive breastfeeding was quite high, at 69.7%. This rate is higher than any of the country averages reported in the UNICEF global expanded database. Only 14.3% of infants were exclusively formula fed. The study found that mothers, who married at an older age and those who deliver by cesarean section were less likely to exclusively breastfeed, so it is suggested that the efforts of the UNRWA should focus on supporting these women to breastfeed. (Musmar & Qanadeelu, 2012)

A newer study, however, had different findings. The cross-sectional study was conducted in 2017 in refugees from Palestine in Jordan. Of the 307 participants, nearly a third lived in refugee camps. The results showed that only 34% of infants were exclusively breastfed. The rate of EIBF was 49%. Women who had more than one child and who did not have problems with breastfeeding were more likely to breastfeed. These results are close to the rates reported in the UNICEF global expanded database above, where the rates of EBF and EIBF in Palestine were found to be 38.1% and 40.8%, respectively. The UNRWA is also in charge of the healthcare facilities in the Jordanian refugee camps. This study adds another target for the UNRWA: to support mothers, which have problems with breastfeeding, such as mastitis. (Takai et al., 2019)

One explanation for the difference in rates is time of data collection. It is possible that the rate of EBF has simply dropped between 2007 and 2017. Also, the former study was conducted in Palestine itself, while the second study focused on Palestinian refugees in Jordan. The additional stress of having to flee to a different country may have had an additional negative impact on breastfeeding practices.

## Discussion and Recommendations

It is evident that breastfeeding has many benefits for babies, mothers and society. Breastfeeding protects children against infection, ensures a healthy gut flora, promotes proper development and can even improve intelligence. For mothers, breastfeeding improves birth spacing and can protect against breast cancer. Breastfeeding also has environmental and economic benefits. It is important for governments to recognize the economic loss associated with a suboptimal immune system and higher susceptibility to disease, as a result of being bottle-fed. This way the appropriate funds can be invested in promoting breastfeeding. It is also important to recognize that, on a larger scale, breastfeeding benefits society as a whole and benefits both the rich and the poor. Overall, the Eastern Mediterranean region compares quite poorly on a global level with regards to the average rate of breastfeeding parameters. However, there is a large range within the region, with some countries having very high rates and some having very low rates. This region is very culturally diverse, with some of the richest and poorest

economies. However, there are areas for improvement in every single country both in the Eastern Mediterranean region and the world.

While many women at least attempt to breastfeed, as is reflected in the high rates of children ever breastfed, many aren't able to do so within the first hour after birth (EIBF). This is a hospital-related issue and training midwives and nurses on the benefits of EIBF should improve the rates of this parameter. Implementing the BFHI is essential in this aspect. Delivery by cesarean section is also sometimes listed as a factor, which negatively impacts the likelihood of breastfeeding. Doctors should recommend giving birth naturally, unless there is a medical reason for performing a C-section. Many babies are also not breastfed for long enough. In order to enable women to breastfeed exclusively for the first 6 months after giving birth, maternity leave is absolutely essential. Other workplace policies, such as frequent breastfeeding breaks during the workday are other possibilities, which can help facilitate breastfeeding. For mothers who don't work, the main deterring factor is usually problematic lactation. Proper education and guidance on the benefits of breastfeeding and on how to successfully breastfeed are needed at this stage. It is important, that all the benefits of breastfeeding for both the mother and the child are communicated to the mother.

The 10 steps to successful breastfeeding, as implemented by the BFHI, should also be followed by maternity wards and hospitals, which are not accredited. Even following some of these steps is an improvement, although there is a link between number of steps implemented and breastfeeding rates. The implementation of BFHI affects the nutritional status of children. Yemen is experiencing the worst famine in current history, yet does not have a single baby-friendly hospital. While the humanitarian crisis of Yemen is way too complex to discuss within the scope of this thesis, ensuring newborns are breastfed is of the utmost importance in a country with such shockingly high rates of child malnutrition.

From the information presented in this thesis, a variety of recommendations can be formulated. Firstly, in countries where the literacy rates of women are low, educating women and improving their knowledge on the benefits of breastfeeding is essential. There are many myths and a lot of misinformation on breastfeeding, which gets spread from mother to mother but also by doctors. Teaching women how to read protects them

from such myths and allows them to read up on the importance of breastfeeding and information on how to retain lactation.

For women, who are unable to produce enough breast-milk for their baby but do not wish to use breast-milk substitutes, one option is to use donated milk. Some hospitals encourage mothers, who have too much breast-milk, to donate it, so that other babies can be fed with it. From a nutritional standpoint, this is a great alternative.

Despite many countries having signed the Innocenti declaration and enforcing the international code of marketing of breast-milk substitutes, promotion of baby formula to health workers is still widely practiced. In some countries it is legal to do so, while some countries, where it is not allowed, legal action is rarely taken. This is a huge area for improvement, since most people view their doctors as authority figures. If a doctor recommends baby formula over breastfeeding to a mother, she will most likely not question this recommendation. The welfare of children needs to be put above the profit of large corporations.

Another obstacle to women continuing to breastfeed for 2 years is the lack of support from the workplace. While most companies will grant a short period of maternity leave, not a lot of workplaces accommodate for women to breastfeed or expel milk at work. By providing more breaks and a space for women to breastfeed or pump milk in privacy for the first 2 years after giving birth, mothers are more likely to continue breastfeeding their child. Some offices already offer daycare on-site, which is a step in the right direction and should serve as an example for other companies. In developing countries, more often than not, women are discouraged from getting an education and working, because these factors are inversely correlated with breastfeeding practices. However, improving women's rights simultaneously improves the wellbeing of their children. Instead of depriving women of attaining economic independence, policies are needed to protect them in the vulnerable time of early motherhood. Iran is a very good example of how such policies can have a positive effect. It was the first country in the EMR to extend the maternity leave in the public sector to 6 months. This improved the rate of exclusive breastfeeding in Iran. In some countries, favorable laws are in place, regarding breastfeeding at work, but not all women know about these laws. It is important for governments to communicate the rights of working mothers. There are

countries, where the prevalence of breastfeeding is quite low, despite policies, which should enable working mothers to breastfeed, such as Egypt. This observation highlights the need for promotion of breastfeeding on a societal and personal level.

Somalia is a country with a worryingly low prevalence of breastfeeding, while being one of the countries with the highest fertility rate globally, at more than 6 births per woman. If the rate of EBF would be increased, birth spacing would also be improved. The lack of clean water also makes it difficult to provide safe nutrition through baby formula. Therefore, efforts to improve breastfeeding in Somalia should be increased. Building a baby-friendly hospital would be a good start to improve breastfeeding rates.

Some policy makers have suggested making a law, stating that a woman must breastfeed her child for 2 years. However, this could mean that husbands can sue their wives, if they choose not to breastfeed. Furthermore, it makes it very difficult for women to return to work. While mothers should be encouraged to breastfeed, punishing them for not being able to do so or choosing not to is not the answer. Furthermore, the added pressure to breastfeed may actually make it harder for women to produce milk. While the Quran encourages women to breastfeed for 2 years (Surat Albakara verse 233), it is not mandatory. Therefore, a law, which makes breastfeeding mandatory, is not in accordance with Islam, which is the main religion in most countries of the EMR. One positive aspect of such a law is, that wet nurses could be more widely used again, if the mother cannot breastfeed her child. While this is a positive alternative to formula milk in terms of biological and nutritional benefits, the emotional connection between a mother and her baby must also be fostered.

The United Nations define a Palestine refugee as a “person whose normal place of residence was Palestine during the period 1 June 1946 to 15 May 1948, and who lost both home and means of livelihood as a result of the 1948 conflict.” The descendants of Palestine refugee males, including legally adopted children, are also eligible for registration. (UNRWA, 2017) However, Palestine has not been peaceful since 1948 and many Palestinians continue to be forced out of their homes to this day. Therefore, new refugees should be able to get registered and have access to the health centers and service of the UNRWA. Giving refugee status to more people, who truly are refugees, could greatly improve the breastfeeding practices in refugee camps, since mothers

would be able to get the support they require. Furthermore, the definition should also include descendants of refugee females.

UNICEF recommends the following steps:

1. Increase funding
2. Fully implement the International Code of Marketing of Breast-milk Substitutes through strong legal measures that are enforced and independently monitored
3. Enact paid family leave and workplace breastfeeding policies
4. Implement the Ten Steps to Successful Breastfeeding in maternity facilities
5. Improve access to skilled breastfeeding counseling
6. Strengthen links between health facilities and communities
7. Strengthen monitoring systems that track and progress

Organizations such as UNICEF and the WHO have published plenty of guidelines and recommendations. It is up to the governments of the various countries to accept this guidance and implement the necessary policies. To summarize, government policies are needed to promote breastfeeding. This can be done on several levels: firstly in education, secondly in hospitals and thirdly in the workplace. The process of improving breastfeeding rates starts with proper education of nurses, doctors and mothers. Not only the benefits of breastfeeding need to be communicated, but also misconceptions must be cleared up and proper breastfeeding techniques need to be taught. Then, these well-trained nurses, midwives and doctors need to apply their knowledge in the hospitals during birth and thereafter. Finally, once women go back to work, it is important for employers to be considerate of their employee's new role as a mother. Policies and laws need to be formulated and enforced, to ensure that mothers are not treated unfairly in the workplace for their choice to breastfeed. No single intervention is sufficient to improve the prevalence of breastfeeding, but a variety of interventions in different fields are necessary.

## Limitations

Due to the ethical barriers involved in randomly assigning one group of babies to be breastfed and one group of babies to receive formula, many studies on the effects of breastfeeding are observational. When observing babies, who happen to be breastfed, with babies, who happen to not be breastfed, it is important to consider that their families may also differ significantly in other aspects.

Not a lot of recent data is available on breastfeeding practices in some countries, especially Gulf countries, which also happen to have more wealth than other countries in the region. The absence of credible and recent information in these countries makes it difficult to analyze the effect of income in the region as a whole.

For some countries, data is either old or not available at all. Especially for complementary feeding, only limited credible data is available. This is the main limitation of this thesis, as it is based solely on the reported statistics of the different countries.

Furthermore, it is difficult to draw global comparisons, specifically regarding the effect of wealth, since UNICEF does not report data on North America and Western Europe most of the time.

# Bibliography


Abul-Fadl, A. M. A. M., & Al-Jawaldeh, A. (2020). Education and Poverty : A Paradigm of Inequity and Disempowerment to Education and Poverty : A Paradigm of Inequity and Disempowerment to Breastfeeding Women, (February). https://doi.org/10.6084/m9.figshare.11889066.v1

Al-Jawaldeh, A., & Abul-Fadl, A. (2018). Assessment of the Baby Friendly Hospital Initiative Implementation in the Eastern Mediterranean Region. *Children*, *5*(3), 41. https://doi.org/10.3390/children5030041

Al-Jawaldeh, A., & Abul-Fadl, A. (2019). A Snapshot of Infant Feeding Patterns in the Eastern Mediterranean Region, (August), 1–5. https://doi.org/10.6084/m9.figshare.8939999.v1

Al Juaid, D. A. M., Binns, C. W., & Giglia, R. C. (2014). Breastfeeding in Saudi Arabia: A review. *International Breastfeeding Journal*. https://doi.org/10.1186/1746-4358-9-1

Gregory, K. E., & Walker, W. A. (2013). Immunologic Factors in Human Milk and Disease Prevention in the Preterm Infant. *Current Pediatrics Reports*. https://doi.org/10.1007/s40124-013-0028-2

Horta, B. L., & Victora, C. G. (2013). Long-term health effects of breastfeeding. *WHO Library Cataloguing-in-Publication Data*, *129*(8–9), 293–298. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18198630

Jawaldeh, A. Al. (2019). Breastfeeding Promotion in the Eastern Mediterranean Region Egyptian Journal of Breastfeeding Theme of the current issue : Breastfeeding Promotion in the Eastern Mediterranean Region Issued by the Mother-Child Friendly Care Association A special editon sp. *MCFC-Egyptian Journal of Breastfeeding (EJB)*, (August). https://doi.org/10.6084/m9.figshare.8942096.v1

Jawaldeh, A. Al, Sayed, G., Alsumaie, M. A., AbuNyayan, A., Ahmed, K. M., Ali, A. M. A., … Abul-Fadl, A. M. A. M. (2019). Status of Breastfeeding Promotion in the Eastern Mediterranean Region. *MCFC-Egyptian Journal of Breastfeeding*, *15*(May), 133–146.

Macenroe, T. (2010). *The Baby-Friendly Hospital Initiative*. *Breastfeeding Medicine* (Vol. 5). https://doi.org/10.1089/bfm.2010.0035

Ministries of Health Puntland State and Somaliland Republic. (2017). Somali Infant and Young Child Nutrition Assessment: Infant and young child nutrition practices,

barriers and facilitators. *Federal Republic of Somalia*.

*Multiple Indicator Cluster Survey (MICS) : 2012 Doha – Qatar*. (2014). *Modern Literature of the Gulf*. https://doi.org/10.3726/978-3-653-05961-8/19

Musmar, S. G., & Qanadeelu, S. (2012). Breastfeeding patterns among Palestinian infants in the first 6 months in Nablus refugee camps: A cross-sectional study. *Journal of Human Lactation*, *28*(2), 196–202. https://doi.org/10.1177/0890334411432715

Pérez-Escamilla, R., Martinez, J. L., & Segura-Pérez, S. (2016). Impact of the Baby-friendly Hospital Initiative on breastfeeding and child health outcomes: a systematic review. *Maternal and Child Nutrition*, *12*(3), 402–417. https://doi.org/10.1111/mcn.12294

Rollins, N. C., Bhandari, N., Hajeebhoy, N., Horton, S., Lutter, C. K., Martines, J. C., … Victora, C. G. (2016). Why invest, and what it will take to improve breastfeeding practices? *The Lancet*, *387*(10017), 491–504. https://doi.org/10.1016/S0140-6736(15)01044-2

Stevens, Patrick, & Pickler. (2009). History of infant feeding. *The Journal of Perinatal Education*, *18*(2), 32–39. https://doi.org/10.1624/105812409x426314

Takai, K., Kamiya, Y., Hababeh, M., Khader, A., Kitamura, A., Zeidan, W., & Seita, A. (2019). Prevalence of exclusive breastfeeding and associated factors among refugees from Palestine in Jordan: a cross-sectional study. *The Lancet*, *393*(March), S51. https://doi.org/10.1016/s0140-6736(19)30637-3

UNICEF, WHO, UNESCO, UNFPA, UNDP, UNAIDS, WFP, W. B. (2010). *Facts for life*. UNICEF.

UNICEF. (2016). Global breastfeeding advocacy initiative Breastfeeding and Gender Equality, 1–3. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---dgreports/---

United Nations Children's Fund. (2019). Global UNICEF Global Databases. New York: United Nations Children's Fund, Division of Data, Analysis, Planning and Monitoring.

UNRWA. (2017). Health Programme Annual Report.

Victora, C. G., Bahl, R., Barros, A. J. D., França, G. V. A., Horton, S., Krasevec, J., … Richter, L. (2016). Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *The Lancet*, *387*(10017), 475–490. https://doi.org/10.1016/S0140-6736(15)01024-7

WHO/UNICEF. (2005). Infant and Young Child Feeding Innocenti Declaration.

WHO/UNICEF. (2017a). *Country experiences with the Baby-friendly Hospital Initiative*.

WHO/UNICEF. (2017b). *Global Nutrition monitoring framework. Operational guidance for tracking progress in meeting targets for 2025*. https://doi.org/Licence: CC BY-NC-SA 3.0 IGO.

WHO/UNICEF. (2018). INFANT AND YOUNG CHILD FEEDING ,BREASTFEEDING A Mother ' s Gift , for Every Child, 20.

WHO. (1981). International Code of Marketing of World Health Organization, 180.

WHO. (2018). *Marketing of Breast-milk Substitutes: National Implementation of the International Code* (Vol. 2012). Retrieved from http://apps.who.int/bookorders.

# Appendix

**Table 18 Diet diversity in the countries of the EMR**

| Country | MDD (%) | MMF (%) | MAD (%) |
|---|---|---|---|
| **Iran** | No information | No information | No information |
| **Tunisia** | 63.2 | 88.4 | 55.5 |
| **Kuwait** | No information | No information | No information |
| **Bahrain** | No information | No information | No information |
| **Qatar** | No information | No information | No information |
| **United Arab Emirates** | No information | No information | No information |
| **Oman** | No information | No information | No information |
| **Saudi Arabia** | No information | No information | No information |
| **Egypt** | 34.7 | 60.2 | 23.3 |
| **Jordan** | 35.0 | 62.2 | 22.5 |
| **Lebanon** | No information | 41,3 | 34,7 |
| **Morocco** | No information | No information | No information |
| **Palestine** | 50.3 | 78.8 | 39.0 |
| **Djibouti** | No information | No information | No information |
| **Iraq** | 44.6 | 77.6 | 35.0 |
| **Pakistan** | 15.0 | 63.1 | 12.7 |
| **Sudan** | 24.0 | 42.1 | 14.7 |
| **Afghanistan** | 22.1 | 51.2 | 15.5 |
| **Somalia** | No information | No information | No information |
| **Syria** | No information | No information | No information |
| **Yemen** | 21.3 | 58.5 | 15.4 |
| **Libya** | No information | No information | No information |