

Breastfeeding: prevalence, health effects, obstacles and ways to encourage it

Maha K. Desouky ^{1,2}, Shahad O. Alahmadi ³

(1) Department of Anatomy, Faculty of Medicine, Minia University, Egypt.

(2) Department of Anatomy, Faculty of Medicine, Taibah University, Saudi Arabia.

(3) Taibah University, Medina, Saudi Arabia.

Corresponding author:

Shahad Alahmadi

Phone: 966594497722

Email: shahad-alahmadi98@hotmail.com

Received: November 2022 Accepted: December 2022; Published: December 30, 2022.

Citation: Maha K. Desouky, Shahad O. Alahmadi. Breastfeeding: prevalence, health effects, obstacles and ways to encourage it. World Family Medicine. December 2022 - January 2023 Part 2; 21(1):198-205

DOI: 10.5742/MEWFM.2023.95251578

Abstract

Background: Breastmilk is the best way to feed infants due to its balanced nutritional composition. Because of its many health benefits, the prevalence of breastfeeding, ways to encourage it and the effects of breastfeeding on mothers and children have been extensively researched.

Objectives: This review aims to demonstrate the short-and-long term health consequences of breastfeeding for infants and mothers. Additionally, it will estimate the rate of breastfeeding mothers, identify the causes behind this rate and discuss ways to increase awareness about its importance.

Main outcomes: The prevalence of breastfeeding is 40% worldwide and 10.2% in the Kingdom of Saudi Arabia (KSA). Women who don't breastfeed list a lack of information, negative attitudes towards breastfeeding within wider society and a return to work as the main reasons that discourage them from breastfeeding. Breastfeeding reduces mothers' risk of breast and ovarian carcinoma, diabetes and BMI by 4.3%, 28%, 32% and 1%, respectively. It also decreases the risk of postpartum depression and increases the duration of amenorrhea. Children who are breastfed for longer periods have lower risks of diarrhoea by 31%, pneumonia by 57%, being overweight by 26%, diabetes by 35% and raises intelligence scores by 3.4.

Conclusion: This review found evidence that breastfeeding reduces the risk of breast cancer, ovarian cancer, Type 2 diabetes, postpartum depression, being overweight, and improves birth spacing. For infants, breastfeeding lowers infectious morbidity and mortality and enhances growth and development. Professional and public education and fathers' support are important to encourage the over 50% of women who do not breastfeed their infants.

Keywords: breastfeeding, maternal health, infant health, effects.

Introduction

The reproductive cycle of humans consists of two stages: pregnancy and nursing. According to the WHO, "nursing or breastfeeding is defined as the normal way of providing young infants with the nutrients they need for healthy growth and development." (1) Breast milk is made of nutrients from the mother's bloodstream in addition to her bodily stores. Even though the composition of breastmilk is unique and varies from one mother to another depending on her baby's specific needs, breastmilk always consists of a perfect balance between protein, fat, sugar and water (2).

Researchers and health professionals recommend that breastfeeding begins within the first hour after birth and continues for at least six months afterwards. In addition to the incredible benefits of breastmilk for babies, studies have found that breastfeeding is important and has many health benefits for breastfeeding mothers as well (3).

Despite all the studies that have concluded that breastfeeding is the best way to provide babies with the optimal nutrients, many mothers do not breastfeed their babies and choose to feed them artificially instead. Artificial feeding is not equivalent to breastfeeding as it lacks the non-nutritional benefits of breastfeeding such as its preventive effects on obesity, chronic diseases and cancer (4).

Thus, it is very important to discover the reasons many mothers do not breastfeed their babies, to find ways to encourage them to do so and to promote the positive effects of breastfeeding on both mother and child health. This article reviews the short-term and long-term health consequences of breastfeeding for the child and the mother, studies the reasons behind the small percentage of breastfeeding mothers and suggests ways to encourage breastfeeding.

Aim and Objectives

The aim of this study is to give an overview on the health benefits of breastfeeding in order to increase awareness about its importance with the following objectives:

1. To demonstrate the prevalence of breastfeeding worldwide and in KSA.
2. To determine obstacles to breastfeeding.
3. To recognise the effects of breastfeeding on maternal health.
4. To recognise the effects of breastfeeding on infant health.
5. To recognise the effects of artificial feeding.
6. Identify how to encourage mothers to breastfeed.

Prevalence

Globally, the prevalence of babies who receive exclusive breastfeeding for the first 6 months of life has significantly increased with time. The rate of exclusive breastfeeding from 1993 to 2013 increased from 24.9% to 35.7% (Fig.1). The Global Breastfeeding Scorecard found that 40% of infants, less than 6 months of age, are breastfed. However, although the prevalence has increased, it still doesn't meet the recommendation of WHO (4).

Although the data are limited, studies have shown that the rates of breastfeeding in KSA have been decreasing for more than two decades. Some of the studies used the World Health Organization's definition of "exclusive breastfeeding," which is feeding infants only breastmilk with no other solids or liquids with the exception of medicines for six months. Those studies have found that only 1.7% to 24.4% of Saudi mothers breastfed their babies exclusively until they were six months. Another study has shown that 21.5% of infants in KSA were exclusively breastfed, 20.6% were bottle fed, while the rest were both breastfed and bottle fed during the first year and a half of their lives. The results of a recent survey revealed that 10.2% of babies were breastfed while just 8% were breastfed exclusively (5).

Obstacles

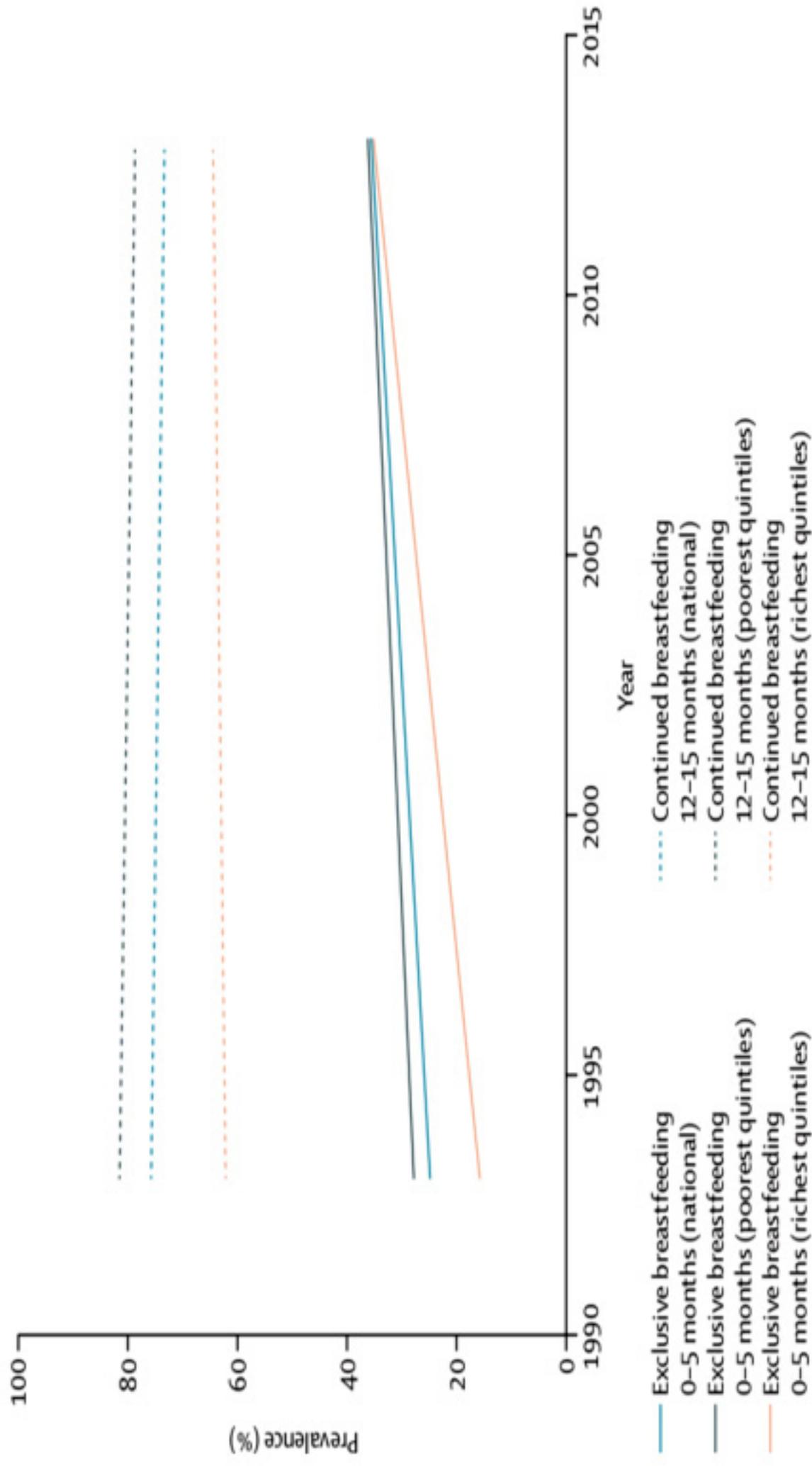
While 44.3% of women initiate breastfeeding, only 13% of them continue breastfeeding until their babies are six months old. The majority of women make their decision to breastfeed or to bottle-feed before they are even pregnant or during the first trimester of their pregnancy. When a mother decides to breastfeed, it is usually because of the health benefits for her infant, her desire to emotionally bond with her new baby, and because of how natural breastfeeding feels. Women who bottle-feed state that among other reasons, the negative attitude of family members and society towards breastfeeding mothers, their uncertainty regarding their milk supply, and return to work prevent them from breastfeeding,(Fig.2) (6).

The effects of breastfeeding on maternal health

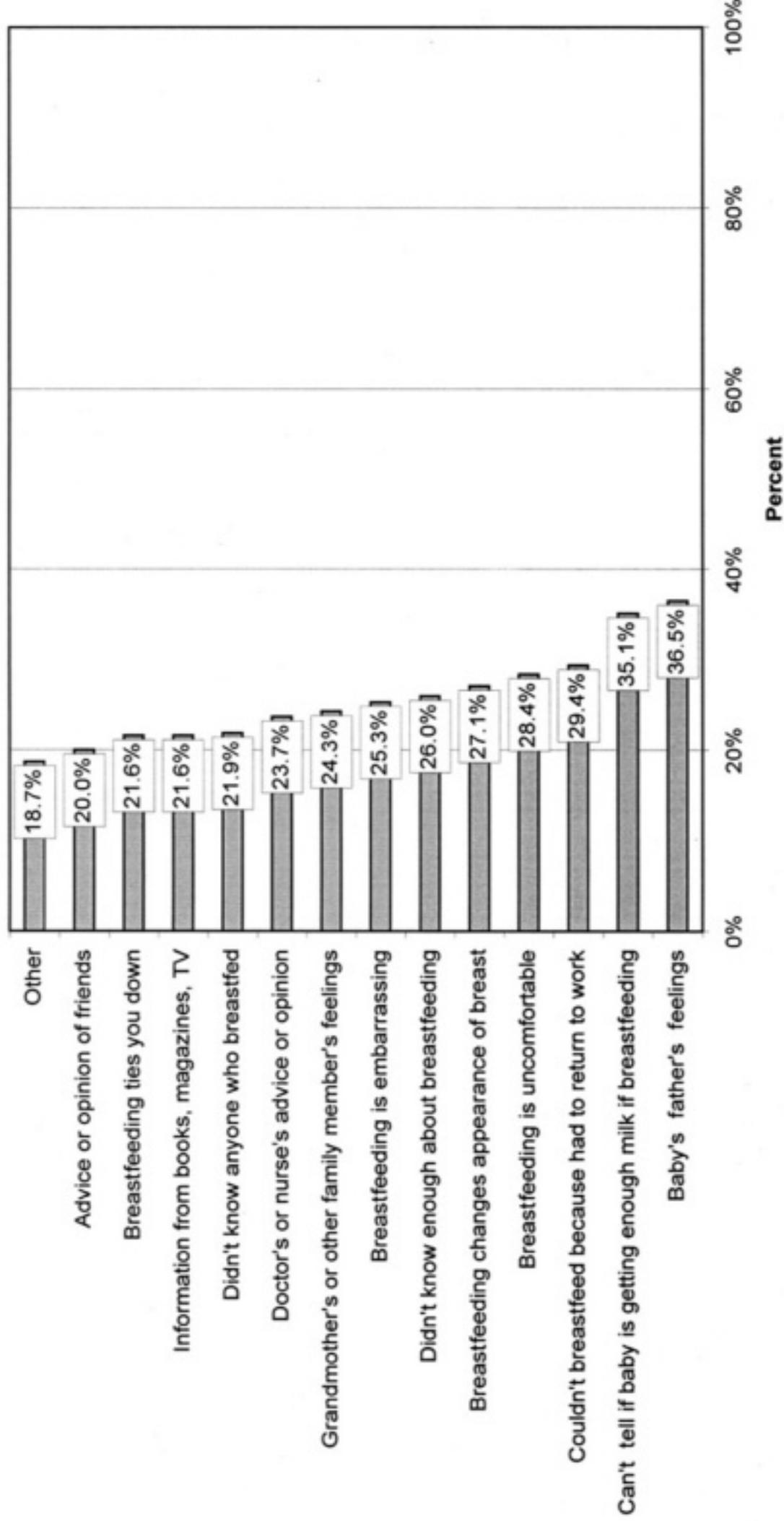
A. Short-term effects

1. Lactational amenorrhoea

During breastfeeding, the suckling stimulus sends nerve impulses to the mother's hypothalamus to decrease the gonadotropin-releasing hormone, which responds by changing the production of the follicle-stimulating hormone (FSH) and the luteinizing hormone (LH) from the anterior pituitary. This hormone is needed to stimulate ovulation to produce ovum. Without this stimulation, there is a time when breastfeeding women have a period of infertility,(Fig.3) (7).



(Fig.1) National and wealth quintile-specific time trends in exclusive and continued breastfeeding, 1993–2013 (4)



(Fig.2) Survey results of bottle-feeding mothers describing factors contributing to bottle-feeding (6)

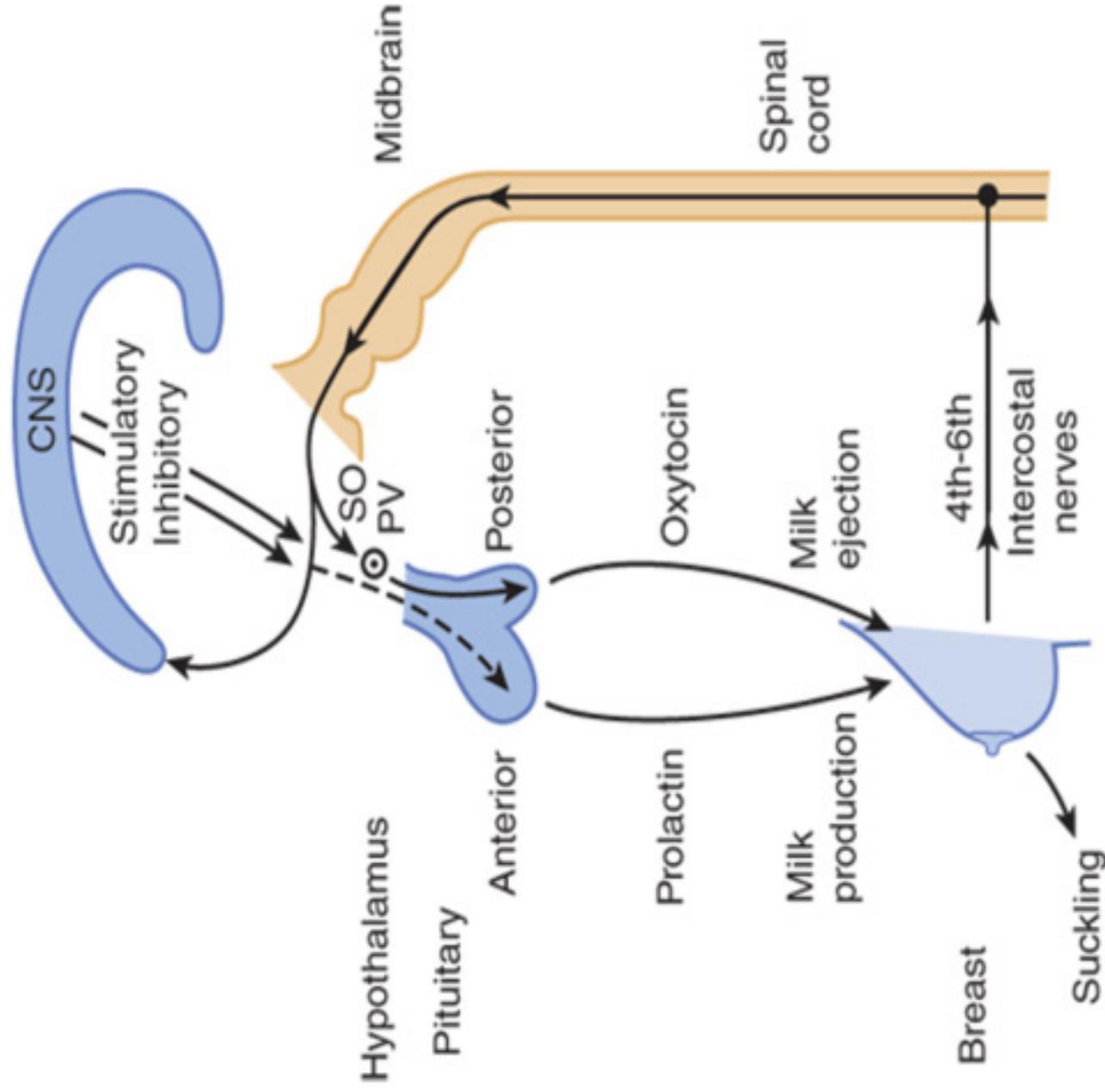


Fig.3) The physiology of lactation.
 (CNS: central nervous system, PV: paraventricular nucleus, SO: supraoptic nucleus.) (7)

2. Postpartum weight change

During pregnancy and after delivery are periods of high risk for weight gain. The role of breastfeeding in weight loss is still unclear. Theoretically, breastfeeding consumes high energy and that is supposed to enhance weight change (10).

However, most studies show no or only little association between breastfeeding and weight change. An analysis of 54 articles on the role of breast feeding on postpartum weight change was inconclusive (4).

High methodological quality studies show a positive association between breastfeeding and weight loss. For every 6 months a woman breastfed, her BMI was 1% lower. This significant reduction could protect her from obesity related disease (11).

3. Postpartum depression

In almost all studies, there is a strong association between the duration of breastfeeding and decreased postpartum depression. However, the exact connection between them is still unclear (12). Several biological and psychological mechanisms have been suggested. First, breastfeeding reduces the cortisol response to stress, which as a result, promotes hormonal process (12). Also, breastfeeding may reduce the incidence of postpartum depression by enhancing the mother's feeling of self-efficacy, improving the child's mood, regulating the mother and baby's sleep and waking rhythm, and by promoting better interaction between the mother and her child (12).

B Long term effects

1. Breast cancer

Breastfeeding lowers the risk of premenopausal and postmenopausal breast cancers. A study of 50,000 women from 30 different countries showed that mothers who breastfeed for 12 months, (which can be the duration of breastfeeding one baby or the cumulative duration of breastfeeding several babies), have a 4.3% lower risk of breast cancer (4).

Lactation decreases the risk of breast cancer by four possible mechanisms.

First, the physical changes in breast tissue during breastfeeding helps the breast to get rid of its potentially damaged tissue cells through the physical exfoliation of breast tissue and breast tissue remodeling through apoptosis after the lactation period (13).

Second, while estrogen promotes breast cancer growth, breastfeeding reduces the number of menstrual cycles leading to a reduction of estrogen levels in the breast (13).

Third, breastfeeding works to decrease the concentration of toxic organochlorines in the breast and many studies suggested there is a positive correlation between organochlorine and breast cancer risk (13).

Fourth, the effect of breastfeeding on increasing the expression of one of the transforming growth factors, beta (TGF- β). This growth factor has a tumor suppressor effect on many types of cancer, including breast cancer (13).

2. Ovarian carcinoma

Over 40 studies have linked prolonged breastfeeding to a reduced risk of ovarian cancer. It has been found that the longer women breastfeed, the more protection they acquire against ovarian cancer (4).

Women who breastfeed for less than 6 months are 17% less likely to develop ovarian cancer, while women who breastfeed for 6 to 12 months have a lower risk of ovarian cancer by 28% compared to those who never breastfed. Mothers who breastfeed beyond 12 months lower their risk of ovarian cancer dramatically by 37% (8).

Breastfeeding protects against ovarian cancer almost in the same way it protects against breast cancer. It reduces the number of menstrual cycles in a lifetime and consequently, reduces the cells' exposure to estrogen, which has been found to promote cancerous cell growth (14).

3. Type 2 diabetes mellitus

Studies have found that there is an inverse relationship between breastfeeding and Type 2 diabetes. One study has suggested that breastfeeding actually reduces the risk of mothers having Type 2 diabetes by 32% (15).

Although other studies were not as specific or as conclusive about the role of breastfeeding in protecting against Type 2 diabetes, it has been suggested by many studies that longer durations of lactation can play a role in preventing Type 2 diabetes. According to a systematic review, mothers whose cumulative duration of breastfeeding is one year reduce their risk of Type 2 diabetes by 9%, by improving glucose homeostasis (8).

The effects of breastfeeding on infant health

A Short- term effects:

1. Diarrhoea

In 2010 alone, diarrhoea was responsible for the deaths of 800,000 children worldwide (16).

A comprehensive review recommended breastfeeding for the prevention and treatment of diarrhoea. The review found that exclusively breastfed babies have about a 31% lower risk of diarrhoea compared to partially breastfed babies. Additionally, breastfeeding reduces the need for hospitalization because of diarrhoea by 72% and lowers the risk of death because of diarrhoea by 77% (17).

The protective effects of breastmilk against diarrhoea has been explained in three different ways. Firstly, it has been suggested that mothers who have been previously exposed to infectious agents produce antibodies known as secretory Immunoglobulin A (IgA), in their breastmilk. These antibodies protect infants against the infectious agents their mothers were exposed to, which reduces

infants' risk of diarrhoea. Secondly, bottle-fed babies are more likely to be exposed to pathogens causing diarrhoea through either contaminated bottles or contaminated milk. Finally, the protective effect of breastfeeding against diarrhoea can be explained by how nutritious the breastmilk is. Those nutrients are necessary to boost infants' immune systems especially in situations where infants suffered from multiple infections (17).

2. Respiratory tract infection

Respiratory infections are rated as the top cause of deaths in young children around the world. In 2010, pneumonia was responsible for the deaths of 1.384 million children under five years of age (16).

Studies have showed that exclusive breastfeeding for at least six months decreases the risk of respiratory infections such as pneumonia and otitis media (18). In addition, breastfeeding has been found to reduce the need for hospitalization due to respiratory infections by 57% (17).

Breastmilk protects against respiratory infections by transferring a mother's antibodies to their infant through breastmilk and because the breastmilk contains oligosaccharides, which are known to protect the infant's mucosa from infectious agents that could cause respiratory infections. Finally, the nutritional composition of breastmilk is necessary to strengthen the infants' immune systems and help them fight against all kinds of infections especially in low income locations where undernutrition is a serious threat. (17).

.B Long- term effects:

1. Performance in intelligence tests

The effects of breastfeeding on child development have been studied for some time. In 1929, one study found that there was a positive correlation between breastfeeding and intelligence (19). Among children and adolescents, breastfed children do better in intelligence tests. They get 3.4 higher scores than non-breastfed children (4).

Children who received breastmilk have higher levels of the long-chain polyunsaturated fatty acids (LCPUFAS), which are important for the development of the cortical brain. Breastfeeding is positively related to brain volume, which means that it promotes structural changes in the brain (19).

Bonding between a mother and infant is considered as another way to enhance the child's cognition (20).

2. Overweight and obesity

Breastfeeding for longer periods decreases the likelihood of children being overweight or obese by 26% (4). This preventative effect can be explained by at least three biological pathways. Breastmilk is a high fat, low protein diet, and it has been proposed that there is positive correlation between protein intake in infancy and the development of later obesity. Differences in hormonal responses to breastmilk and infant formula constitute another potential mechanism. With formula, insulin secretion is greater,

which results in fat deposition and an increased number of adipocytes. Finally, differences in dietary preferences can have a role, too (19).

3. Type-2 diabetes

The ratio of having Type-2 diabetes among children who are breastfed compared to non-breastfed children is 0.65 (4). This significant reduction can be explained by several mechanisms. Firstly, the presence of LCPUFAS in breast milk particularly docosahexaenoic acid (DHA) and arachidonic acid (AA) decreases the glucose level in the blood. High saturation of LCPUFAS in skeletal muscle membrane may decrease the incidence of insulin resistance, β -cell failure, and Type-2 diabetes. Another possibility is that the high concentration of insulin in infant formula, may results in β -cell failure and Type-2 diabetes. In addition, the effect of breastfeeding against obesity may constitute in the reduction of Type-2 diabetes (19).

The effects of artificial feeding

Non-exclusive breastfeeding in infants costs the world 1.4 million deaths and 10% of the disease burden in children younger than 5 years (21). In developing countries, the mortality rate in infants increases 6 to 10 times in artificially-fed infants (22). Artificial feeding increases infant mortality rates through increasing the risks of malnutrition diseases as well as infections (18). Evidence links artificial feeding to long-term immunological diseases such as atopic conditions, asthma, Type-1 diabetes, celiac disease and inflammatory bowel diseases (22).

Artificial feeding is also associated with a higher risk of cardiovascular diseases including hypertension, higher blood cholesterol levels and atherosclerosis (22). In addition studies have found that bottle-fed children have an increased risk of childhood leukemia (22).

Ways to encourage mothers to breastfeed

Practicing breastfeeding has many stumbling blocks. Understanding the obstacles to breastfeeding is critical to encourage and increase levels of breastfeeding.

1. Father's support:

Many studies suggest that involving fathers in this process promotes the parenthood experience (6). Studies showed that strong social support from partners increases the rates of breastfeeding (23).

2. Professional education

Health care providers must provide parents with detailed information and extensive education about the benefits of breastfeeding and discuss the barriers and issues surrounding breastfeeding with each parent (6).

Attendance to antenatal classes increases the rate and duration of breastfeeding. By providing working mothers with strategies that help them continue breastfeeding and promoting self-efficacy, mothers will hopefully breastfeed their children for longer periods of time (24).

3. Public education

Family support and information about breastfeeding presented in the media can encourage mothers to breastfeed. In fact, magazines, television and social media are reported to be some of the most important sources of information that will encourage mothers to breastfeed (6).

Conclusion

The global prevalence of breastfeeding is 40% while it ranges from 1.7% to 24.4% in Saudi Arabia. This low prevalence is due to many factors involving inadequate milk supply, return to work, lactational and medical issues, and the attitude of society and family members. As many studies have shown, breastfeeding has short- and long-term positive effects on the mothers' health as well as infants' health unlike artificial feeding which increases mortality and morbidity rates. Finally, mothers need to be encouraged to breastfeed their children by changing the attitudes of society, providing professional education and improving public education.

References

1. Fox S. Health Topics. Pew Internet & American Life Project. 2011;1–33.
2. Andreas NJ, Kampmann B, Le-Doare KM. Human breast milk: a review on its composition and bioactivity. *Early human development*. 2015;91(11):629–35.
3. Galson SK. Mothers and Children Benefit from Breastfeeding. *Journal of the American Dietetic Association*. 2008 Jul;108(7):1106.
4. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet*. 2016;387(10017):475–90.
5. Al Juaid DAM, Binns CW, Giglia RC. Breastfeeding in Saudi Arabia: a review. *International Breastfeeding Journal*. 2014;9(1):1.
6. Arora S, McJunkin C, Wehrer J, Kuhn P. Major Factors Influencing Breastfeeding Rates: Mother's Perception of Father's Attitude and Milk Supply. *Pediatrics*. 2000 Nov 1;106(5):e67–e67.
7. Gary D. Hammer SJM. Pathophysiology of disease: an introduction to clinical medicine. 8th ed. New York: McGraw-Hill Education Medical; 2019.
8. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatrica*. 2015 Dec;104:96–113.
9. Gray RH, Campbell OM, Apelo R, Eslami SS, Zacur H, Ramos RM, et al. Risk of ovulation during lactation. *The Lancet*. 1990;335(8680):25–9.
10. Neville CE, McKinley MC, Holmes VA, Spence D, Woodside J V. The relationship between breastfeeding and postpartum weight change—a systematic review and critical evaluation. *International Journal of Obesity*. 2014;38(4):577–90.
11. Bobrow KL, Quigley MA, Green J, Reeves GK, Beral V. Persistent effects of women's parity and breastfeeding patterns on their body mass index: Results from the Million Women Study. *International Journal of Obesity*. 2013;37(5):712–7.
12. Figueiredo B, Dias CC, Brandão S, Canário C, Nunes-Costa R. Breastfeeding and postpartum depression: state of the art review. *Jornal de Pediatria (Versão em Português)*. 2013;89(4):332–8.
13. Zheng T, Holford TR, Mayne ST, Owens PH, Zhang Y, Zhang B, et al. Lactation and breast cancer risk: A case-control study in Connecticut. *British Journal of Cancer*. 2001;84(11):1472–6.
14. Scoccianti C, Key TJ, Anderson AS, Armaroli P, Berrino F, Cecchini M, et al. European Code against Cancer 4th Edition: Breastfeeding and cancer. *Cancer Epidemiology*. 2015 Dec;39:S101–6.
15. Aune D, Norat T, Romundstad P, Vatten LJ. Breastfeeding and the maternal risk of type 2 diabetes: A systematic review and dose–response meta-analysis of cohort studies. *Nutrition, Metabolism and Cardiovascular Diseases*. 2014;24(2):107–15.
16. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Global, regional, and national causes of child mortality: An updated systematic analysis for 2010 with time trends since 2000. *The Lancet*. 2012 Jun 9;379(9832):2151–61.
17. Horta BL, Victora CG, Organization WH. Short-term effects of breastfeeding: a systematic review on the benefits of breastfeeding on diarrhoea and pneumonia mortality. Geneva: WHO; 2013. 2013;
18. Chantry CJ, Howard CR, Auinger P. Full breastfeeding duration and associated decrease in respiratory tract infection in US children. *Pediatrics*. 2006;117(2):425–32.
19. Horta BL, Victora CG. Long-term health effects of breastfeeding. *World Health Organization*. 2013;129(8–9):57–64.
20. Britton JR, Britton HL, Gronwaldt V. Breastfeeding, sensitivity, and attachment. *Pediatrics*. 2006;118(5):e1436–43.
21. Mekuria G, Edris M. Exclusive breastfeeding and associated factors among mothers in Debre Markos, Northwest Ethiopia: a cross-sectional study. *International breastfeeding journal*. 2015 Jan 20;10(1):1.
22. Organization WH. Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals. In: *Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals*. World Health Organization; 2009.
23. Brown A, Davies R. Fathers' experiences of supporting breastfeeding: Challenges for breastfeeding promotion and education. *Maternal and Child Nutrition*. 2014;10(4):510–26.
24. Sun K, Chen M, Yin Y, Wu L, Gao L. Why Chinese mothers stop breastfeeding: Mothers' self-reported reasons for stopping during the first six months. *Journal of Child Health Care*. 2017;21(3):353–63.