

THE EVOLUTION OF NATURAL ALIMENTATION

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A - study design, **B** - data collection, **C** - statistical analysis, **D** - interpretation of data, **E** - manuscript preparation, **F** - literature review, **G** - sourcing of funding

ABSTRACT

Advances in medicine and the evolution of health-related behaviors through time and across cultures have contributed to changes in attitudes toward natural alimentation. In the past, women who breastfed their babies were educated by word of mouth and family traditions passed on by their female relatives and communities, and the act of breastfeeding itself constituted a socio-cultural process.

The health-related benefits of breast milk for infant nutrition have long been known. Throughout the ages, the image of the breastfeeding woman has inspired many artists and promoted natural alimentation. Ancient beliefs and religious practices were combined with the teachings of the church as well as alchemy principles, and lactation counseling was based on popular belief rather than scientific or medical knowledge. In modern times, breastfeeding has experienced a rise in popularity and is recommended to mothers during pregnancy and as part of contraception education. Anecdotal beliefs regarding the beneficial effects of breastfeeding on children's overall psychological wellbeing have become a subject of scientific investigation. Within the current pregnancy-related standards, the modern promotion of breastfeeding encompasses nutritional, immunological and psychological aspects. In this paper we have summarized the evolution of the beliefs that have surrounded breastfeeding from antiquity to the present day.

KEYWORDS: breastfeeding, historical outline, lactation

BACKGROUND

Worldwide, breast milk is recommended as the first choice of nutrition for newborns. Research demonstrates that breast milk provides the best balanced diet for a growing infant [1,2]. Archeological findings and skeletal analyses of our ancestors serve as a source of information on past nursing practices, and age of weaning can be determined by examining the calcium content of teeth and bone matter as well as strontium and nitrogen isotopes [3]. In prehistoric times, the validity of nursing was supported by examples of mythological heroes as well as the rules set in place by local authorities; scientific knowledge was not taken into account [4].

ANTIQUITY TIMES AND MYTHOLOGY

In the Bronze Age (c. 1600 BC), the image of the breastfeeding woman was widely popularized by scul-

tures and papyrus inscriptions. Commemorations of the act of breastfeeding throughout that time and until the Iron Age can be found in the form of statues, for example those depicting the ancient Egyptian goddess Isis nursing her son Horus (VI–III BC). Goddesses were then set as examples for women to nurse their infants until age two or three years, even if the child had already been given solid foods [5]. A mother's milk was considered the most appropriate, convenient and cleanest form of feeding, and breastfeeding could act as a contraceptive. At that time, the relationship between infertility and nursing was already known; it is unclear, however, whether that was a result of religious restrictions regarding abstemiousness during the time of nursing or the contraceptive properties of that period [5]. The Ebers papyrus (1550 BC) compares the smell of a woman's milk to the smell of dried manna, distinguishing it from the sour smell

of fish. Early mentions can be found in that period of the healing qualities of breast milk for ailments such as rashes, burns, eye diseases and pediatric urological problems [6].

The topic of breastfeeding can also be found in Greek mythology from the age of Homer (c. IX–VIII BC). The image of breastfeeding mothers can be found in the Iliad, where Hecuba nursed her son Hector [I1,XXII,82–83] and in the wrath of Achilles [I1,XVI,203]. Nursing was recommended in the Hellenic world, however the trend to employ wet nurses was already on the rise [7].

In Roman mythology, the most prominent example is the founding of Rome and the she-wolf nursing the brothers Romulus and Remus. Several events surrounding a newborn were attributed to minor goddesses; for example, the creation of milk within the woman's breast was the responsibility of Rumina, the child learning to suck was attributed to Educa, and Vaginatus was in charge of opening a child's mouth for their first scream [8]. Philosophers such as Tacit, Aulis Gellius, Plutarch and Plinius argued for the necessity of breastfeeding by the child's biological mother. They postulated that a mother's milk is the most natural source of nutrition for a newborn and therefore the best, which is also due to the bond formed between the child and the mother during the act of feeding [4].

Arabic medicine, at the time, relied on knowledge accumulated by the Greeks. Around the 9th century AD, the works of Ibn Sina (Avicenna 980–1036) and Al Razi (Rhazes 850–932) were translated into Arabic from Persian, and became the most popular handbooks used in Arabic medicine. In his book *The Canon of Medicine*, Avicenna included several passages on natural alimentation. He listed the benefits of breastfeeding and, for the first time, recommended feeding a newborn two or three times a day, especially in the days directly following delivery. Arabic society was under immense influence of the teachings of the Koran [4,8].

Among Jewish people, children were considered a blessing from God and a reason for jubilation. Despite the fact that a greater value was attributed to male offspring, infanticide, which at that time was quite common among other cultures, was forbidden in the Judaic world. Feeding the newborn was considered a mother's duty to her child as well as her husband. The newborn was latched onto the breast directly after delivery, sometimes even before the umbilical cord was severed, or within the first 24 hours of life. According to the *Talmud*, the child may remain on the breast for the entire day, with one feeding at night. No information on artificial feeding was made available [6]. The recommended period for breastfeeding an infant, as proposed by Rabbi Josha, was set between a minimum of 18–24 months and up to five years, depending on necessity. *The Books of the Maccabees* contains a passage describing that process: "I carried you in my womb for nine months and nursed you for three years. I have taken care of you and looked after all your needs up to the present day" [5, 2Mch 8,9].

FROM THE MIDDLE AGES TO THE AGE OF ENLIGHTENMENT

In the Middle Ages, medicine was based on the ancient scriptures (Soranus and Galen, modified by Avicenna and Rhazes), folk beliefs and rituals, as well as the teachings of the Church and alchemist principles. Breastfeeding and women's diseases were studied by the Italian physician Trotula of Salerno [4]. In his book *De proprietatibus* (1230), which was based on Aristotle's *Historia animalium*, Bartholomeus Anglicus describes a mother as the best source of nourishment for her child, while also stressing the concept of motherly love and sacrifice. Breast milk was considered best for the child. The issues surrounding lactation began to be popularized and the stasis of breast milk was associated with diseases of the breast (The theorems by Konrad of Byczyna). It was noted that breastfeeding established a stronger bond between the mother and child [11]. In the period between the 5th and 14th centuries AD, the average breastfeeding time was three to four years and up to six years in Arabic countries [8].

New discoveries, a change of mindset and the popularization of medical novelties in print contributed to a greater understanding of the subject of lactation, not only among physicians, but also society in general. In 1544 AD, English lawyer and pediatrician Thomas Phayer published his *Booke of Chylidren*, which came to be known as the first book of pediatrics written in the English language. In 1565, the first information regarding the alimentation of newborns and the possibility of disease transmission was documented by Simon de Vallambert [7], with a case study of a mother suffering from syphilis. For nearly the entire duration of the Classical period, the belief was that a woman's milk held little to no value during puerperium, as the woman was incapable of producing high-quality milk after an exhausting labor. It was not until 1699 that colostrum and its laxative qualities for helping the infant pass meconium was recommended by German surgeon and clinician Michael Etmüller. In 1719, French surgeon Pierre Dionis pointed to colostrum as more nourishing than later milk, and in 1776 Swedish clinician Rosen von Rosenstein claimed colostrum could act as a protective agent against several diseases [4,8].

The authority of the Pope and the Roman Emperor contributed to the frequent depiction of the image of the nursing mother in Christian sacral art in an attempt to promote natural alimentation. The Flemish artist Peter Paul Rubens (1577–1640) applied his unconstrained style to sacral art, interpreting Christian as well as mythological themes. At the turn of the century, new ideas and medical discoveries inspired Rubens' works, and his 1612 painting *Caritas Romana* depicts a daughter (Pero) breastfeeding her father (Cymon) in a dungeon, in order to save him from a gruesome death by starvation [10].

In that period, the expression of western standards also manifested in the production of the first breast-related garment: the brassiere [11].

In the 19th century, natural alimentation was advised by physicians across Europe and scientific studies were conducted. Breastfeeding was considered a religious and national duty that encompassed the emotional and medical aspects of the process. However, the higher classes of society, especially in France and England still preferred to employ wet nurses, and women who wanted to breastfeed their own infants had to overcome disapproval from their families. In Germany, the Protestant religion heavily emphasized the benefits of breastfeeding, citing the mother's duty to their offspring. In Scandinavian countries, breastfeeding was common among all social classes, which resulted in a markedly lower infant mortality rate compared to other European countries at the time. At the end of the 19th century, many Polish physicians began to advise latching the newborn onto the breast between four and eight hours after delivery, and in exceptional cases (should lactation be delayed) the use of warm water and chamomile enemas were recommended to enable the passage of the meconium [12,13].

MODERN TIMES AND HISTORY OF POLISH BREASTFEEDING

In the first half of the 20th century, the nutritional value and digestibility of colostrum were publicly acknowledged. In 1892, Paul Ehrlich demonstrated that immunities to certain diseases are passed through breast milk from the mother to her child [14].

In Poland, breastfeeding was encouraged. During the second half of the 20th century, Poland was a predominantly rural country with large farming communities. The number of women from rural areas who gave birth in hospitals was quite low. In the cities, industries were slowly growing and the people from working class districts usually had poor living conditions and a low income. A system of childcare stations developed slowly.

During the interwar period, physicians recommended breastfeeding on a set time regimen with a couple of hours rest at night. Breastfeeding was recommended for a duration of 12 months, and a child's diet included fish oil and fruit juices for scurvy and rickets prophylaxis, starting between four and six months of age. The contraindications for breastfeeding were tuberculosis, wasting syndrome, renal failure and severe heart defects, but not syphilis [15–18].

Due to the prevailing famine in the interwar period, breastfeeding was often the only source of nourishment for infants. Infant mortality rates rose (coefficient > 150), mostly due to pneumonia, infectious diseases, and infectious diarrhea [19].

At the turn of the 19th and 20th centuries, much research emerged comparing the composition of human and animal milk. Beliefs about the beneficial aspects of colostrum were prevalent in circles of physicians and midwives; nonetheless, many still recommended hir-

ing wet nurses or feeding the newborn artificially for the first days or weeks after delivery. In 1805, the *Vilnius Journal* published the treaty 'About the physical upbringing of children' by Jędrzej Śniadecki (1768–1838), which became the first work of the developing field of Polish pediatrics. Śniadecki, an advocate for natural alimentation, underlined the relationship between lactation and postpartum diseases and mortality. He described the laxative properties of colostrum, which helps in passing meconium. In 1867, Ludwik Władysław Rzepecki, based on the experiences of hospitals in London, Paris and Stockholm where infant mortality rates grew after feeding with animal milk, recommended exclusively breastfeeding for the first 6 months and afterwards a progressive inclusion of solids in the diet [20].

In 1864, the faculty of pediatrics of the Jagiellonian University was founded, with a popular children's polyclinic headed by Dr Maciej Leon Jakubowski (1837–1915) [21]. *Tips on nutrition and childcare during the first year of life*, the first handbook for the public with guidelines regarding nutrition and child-alimentation, recommended breastfeeding. It stated that the frequency of feeding should be every two hours during daytime and every three hours at night. The handbook recommended that children are breastfed for the first year and that supplementary nutrition should be introduced during that period [22]. Sznabl (1838–1912), a Polish doctor and teacher, promoted breastfeeding and believed that artificial alimentation is a necessary evil. The belief during this time was that, apart from the benefits to the child, breastfeeding may also be advantageous to the mother [16].

Neither the efforts of physicians nor midwives had any effect on the practices of the rural environment: the main reason for the rural mother to dismiss breastfeeding was her absence from the home. On average, the infant was nursed in the morning, evening and once at night [22].

After World War II, the medical universities in Poland reopened. Pediatric textbooks and guides for mothers were published that stressed the importance of natural alimentation. In 1956, *La Leche League*, the first organization for the promotion of breastfeeding and education on lactation, was founded in the USA. In the 1970s, midwifery in Poland circled back to separating mothers from their newborns and introduced feeding schedules in accordance with the current regime on maternity wards. Artificial alimentation was back in favor and was regarded as a sign of higher social status [23]. However, modern Polish midwifery is marked by great changes: as in western countries, the current standards on maternity wards allow the mothers to stay with their children on the base of a 'rooming-in' system that provides for constant contact between the mother and child and enables feeding 'on demand'. There are few things considered to be contraindications for breastfeeding: active tuberculosis, HIV, as well as alcohol and substance abuse [24].

In more recent history, anecdotal beliefs regarding the beneficial effects of breastfeeding on children's overall psychological wellbeing have become a subject of scientific investigation. The most commonly reported association between breastfeeding and psychological functioning relate to cognitive function, psychosocial adjustment and the emotional relationship between the mother and child [19,25–29]. Despite the popular assumptions regarding the beneficial effects of breastfeeding on the mother–child relationship, this requires further empirical evaluation. A review by Jansen et al. [19] concluded that these assumptions are not currently supported by empirical evidence and should therefore not be treated as a foundation for the recommendation of breastfeeding. Nonetheless, the current empirical data suggests many other psychological benefits associated with breastfeeding, especially those related to cognitive performance later in life.

There is evidence to suggest that breastfeeding is associated with enhanced cognitive performance in childhood and a cognitive advantage [25,26] as well as higher learning skills in school-aged children [27], compared to children who were not breastfed. A recent seven-year follow-up study conducted on a group of 468 infants in Kraków, Poland, found that breastfeeding in infancy is related to better cognitive development in childhood, and the IQ gain in that group, compared to the reference group, could be observed as soon as at age one year and remained stable throughout preschool [28].

An Australian longitudinal study, following participants for 14 years, also found that longer breastfeeding (past six months) was associated with better psychosocial adjustment in childhood and adolescence and a protective factor against adverse mental health outcomes later in life [29]. These findings directly correspond with the current WHO guidelines on the recommended duration of breastfeeding [23]. In the 1960s, a trend to replace natural alimentation with the artificial alternative emerged in Africa. Due to the use

of watered down solutions and poor hygiene, infants and children showed symptoms of malnutrition and diarrhea, which increased the risk of child and infant mortality. After the worrying statistical data were made public, WHO launched a campaign called 'Breast is Best'.

SUMMARY REMARKS

Throughout the ages, the image of the breastfeeding woman has served as an inspiration for artists as well as for the promotion of natural alimentation. In the 19th century, the death rate among infants during the first year of life was high (20–25%), and hence some countries began to stress the prognoses, mortality rates and survival rates of breastfed infants in contrast to those who were receiving artificial alimentation. In the first half of the 20th century, the beneficial properties of human colostrum were widely recognized. Physicians started to educate women about benefits of lactation and gave them advice about proper lactation techniques. The rapid urbanization from the 17th century to the second half of the 20th century was marked by many scientific discoveries, which became the foundation for changes in society regarding breastfeeding. Scientific and technical inventions influenced social status and the readiness to migrate.

Mother's milk has been deemed the most appropriate source of alimentation for newborns, recommended by specialists in the fields of nutrition, public health and pediatrics. It constitutes the best source of nutritional components, delivered in optimal amounts in accordance with varying caloric demand at different developmental stages. Breastfeeding is now considered the golden standard in the alimentation of newborns and infants by The World Health Organization and various scientific societies. The development of a specific stance on breastfeeding in mothers is currently regarded as a complex process that should begin at the start of pregnancy.

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Word count: 2750

• Tables: –

• Figures: –

• References: 29

Sources of funding:

The research was funded by the authors.

Conflicts of interests:

The authors report that there were no conflicts of interest.

Cite this article as:

Broers B, Sioma-Markowska U, Królak-Olejnik B, Fila-Witecka K, Halarewicz-Ciasullo A, Brenk A. The evolution of natural alimentation. *MSP* 2018; 12, 3: 42–46.

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Received: 23.03.2018

Reviewed: 12.07.2018

Accepted: 7.09.2018