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The composition of mother's and formula milk and their impact on the health and growth characteristics of infants in Basrah City, Iraq

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Abstract

Objective: a descriptive and practical study was conducted on a random sample of 150 infants had taken from child health care centers in Basrah governorate (Iraq), who fed on breast milk or dried formula milk and involved males with females at age 1month old and they were followed for the full 12 months of their lives to show the impact of the milk type on the child's health , growth and body characteristics. **Results:** The most remarkable results showed that all infants were had their own vaccines. 40.9% of breastfed babies were dynamically active , while 100% of formula lactation babies were inactive and lethargic . All breastfed babies were not refuse suckles from mother breast while formula fed babies were refuse. Also , 27.3% of breastfeeding babies had diarrhea and vomiting compared to 72.7% who didn't had , whereas an opposite ratios 75% , 25% was in formula feeding babies . Moreover , 27.3% of breastfed babies were had a walking delay compared to 67.9% of formula fed babies. In body measurements, the breastfeeding babies were gain weight more over formula lactation babies, where the average weight gain was 12-18gm in 4-20 weeks and increased to 46gm in 48 weeks post-birth. In favor of breastfed infants, the head perimeter growth rate was 2-3 cm between the months of 5-12 and the rate of increasing body length was 4-5 cm per month , along full year of their age. **Conclusions:** Mother's milk ensures a healthy and optimal infant diet that meets all of the infant's nutritional needs that help the child grow more efficiently in terms of motor and skill activity, as well as psychological and cognitive development, which is socially reflected by improved parent-child relationship. It has a strong effect on naturally increasing of weight, height and head size, increases immunity and prevents diseases such as scurvy and rickets.

***Keywords*:** Mother's milk , formula milk , Growth characteristics, Basrah city.

Introduction

The impact of breastfeeding on the health and development of infants has been the subject of scientific research for decades. Breastfeeding has positive effects on the infant's cognitive development and is more pronounced in premature infants [1]. Breastfed infants have a higher IQ than non-breastfed infants, and the amount of reciprocal touch, tactile stimulation, and mother's view to the infant are significantly higher during breastfeeding , this has a positive impact on the psychological development and social adaptation of the child [2].

It has been scientifically proven that breastfeeding is the best way to feed children , especially in the first half of their first year , because mother's milk contains all the energy sources and vital nutrients necessary for the child physiological development [3]. Also, the mother's milk gives the baby an immunity to disease , especially viral diseases , because it contains some protective materials against infection with these diseases [4,5].

Some studies indicate that the calorie intake of babies who are breastfed is lower than that of formula fed babies, for this reason , weight gain is more noticeable in the case of formula fed infants than in breastfed infants [6,7]

Mother's milk is fresh and sterile , naturally, in every detail of its chemical structure, and there is no possibility of contamination , while artificial milk is made from cattle milk modified to approximate the general structure of mother's milk [8]. Mother's milk provides the child with an ideal food that gives him all needs for various nutritional elements, whereas, some multivitamins pharmaceuticals must be used or using formula fortified with these vitamins in the case of formula feeding during this period [9].

This study was conducted to explore the difference between the effect of breastfeeding and formula feeding on psychological, motor, social, health, and body development within one year of a child's birth.

Materials and Methods

The present study included a sample of 150 infants of age one month old , who were visit child health care center in Basrah city (Iraq) , half of them feed on breast milk and the others on formula milk. These infants were monitored throughout 12 month of lactation period , from 2024 to 2025, for studying of their cognitive , motor , social and health development .Also, the weight gain, height, and head perimeter of infants were measured at different age levels (1,2,5 and 12 months).Weights were measured on a digital scale, head to foot lengths were measured using a length ruler, and head perimeter was measured using a measure tape that wrapped around the forehead to the back of the head. In addition, the characteristics of infant's mothers were studied, and the components of both breast and formula milk were analyzed according to [10] using the device of Eko milk analyzer ,which calibrated with distilled water then the milk sample putted in and the results were recorded. The results were analyzed using SPSS Statistical program version 26 to illustrate differences between the data by applying T-test and finding the ratios and significance at $P \leq 0.05$.

Results

Chemical components of breast and formula milk

The tables (1, 2) of energy and chemical components of the two types of milk revealed a difference in the percentage of some ingredients , notably Casein , some salts ,Iron , Phosphorus , Riboflavin , Nicotinic acid ,Vitamin (A,C,K) and Calories, while the rest components were approximately close or equal.

Table 1: Percentage of chemical components for breast milk and formula milk

Component	Breast milk %	Formula milk %	Component	Breast milk %	Formula milk %
Water	87.5	87.1	Phosphorus	0.018	0.097
Total solids	11. 9	12.3	Carotenoids	28	36
Protein	1.4	2.9	Thiamine	15	45
Casein	0.5	2.8	Riboflavin	44	160
Lactalbomen	0.5	0.5	Nicotinic acid	170	81
Lactoglobulin	0.3	0.3	Pyridoxine	10	51
Lipid	3.6	3.6	Pantothenic acid	198	349
Lactose	7	5	Folic acid	0.19	0.22
Ash	0.23	0.70	Inositol	40	14
Sodium	0.014	0.059	Vitamin A	53	35
Potassium	0.056	0.137	B12	0.21	0.49
Calcium	0.025	0.125	Vitamin C	4.2	1.6
Magnesium	0.005	0.014	Vitamin D	0.6	0.2
Iron	0.022	0.0016	Vitamin K	0.29	95
Sulfur	0.016	0.029	Calories/100ml	75	66

Table 2: The amount of energy and some components per 100 ml for breast milk and formula milk.

component	Units	Formula milk	Breast milk
Energy	kcal/100ml	63.3 - 67.2	66 - 69
Protein	g/100ml	1.6 - 2.6	1.3
Fats	g/100ml	3.1 - 2.9	3.4 - 4.1
Carbohydrate	g/100ml	7.7 - 8.1	7.2 - 7.3
Lactose	g/100ml	5.1 - 6.1	6 - 7.1
Ash	g/100ml	0.3 - 0.5	0.2
Moisture	g/100ml	86.6 - 86.9	_

Characteristics of infants

Table (3) shows the characteristic results and comparison of breastfeeding and formula feeding infants. All infants from the two groups were 100% vaccinated . 40.9% of breastfeeding infants were active and 59.1% were inactive and sleepy , versus 100% inactivity of formula fed infants .The ratios for quietude and not crying character were in close as 18.2% and 17.9% quiet infants , while 81.8% and 82.1% were cry constantly. It also found that 100% of breastfeeding babies don't refuse the suckle while 100% of formula fed babies do. 27.3% of breastfeeding babies had diarrhea and vomiting while 72.7% did not , unlike a formula lactating babies, 75% get , 25% don't . The ratios for getting Sickness were in close as 68.2% get , 31.8% don't for

breastfeeding babies and 75% get , 25% don't for lactating babies. Also 27.3% of breastfed babies had walking delays, whereas 67.9% of lactating babies had this condition. Ratios were also in close in terms of the number of intake full daily suckles for both baby groups ,as they were 81.8% , 78.6% get full daily suckles while 18.2% , 21.4% not get .

Table 3: Characteristics of breastfeeding and formula feeding infants.

Infant's Characteristics	Breastfeeding infants				Formula feeding infants			
	P+ve	%	N-ve	%	P+ve	%	N-ve	%
Vaccination	66	100 %	0	0%	84	100 %	0	0%
Vitality & Activity	27	40.9 %	39	59.1 %	0	0%	84	100 %
Quietude & not crying	12	18.2 %	54	81.8 %	15	17.9 %	69	82.1 %
Suckle Refusing	0	0%	66	100%	84	100 %	0	0%
Getting Diarrhea & Vomiting	18	27.3 %	48	72.7 %	63	75%	21	25%
Getting Sickness	45	68.2 %	21	31.8 %	63	75%	21	25%
walking delay	18	27.3 %	48	72.7 %	57	67.9 %	27	32.1 %
Intake full daily suckles	54	81.8 %	12	18.2 %	66	78.6 %	18	21.4 %

Body measurements of infants

Table (4) clarify the physical measurements of infants to both types of suckles for different months of the first year of their life ($P \leq 0.05$). The difference in the increasing rate in head perimeter up to 5 months was 2cm and was reached to 3cm at 12 months of age , in favor of breastfeeding babies. In terms of increasing rate in body length, the difference was between 4-5cm in favor of breastfeeding babies over formula feeding along full year of their ages. In terms of weight gain for babies , the table shows that in the first four and eight weeks of birth there were a slight increase in weight averages in favour of breastfeeding babies ,which represented by 12g and 18g respectively. Over the next 20 and 48 weeks , the average weight difference was increased to 18g and 46g , respectively, for the benefit of breastfeeding babies at the expense of formula feeding babies.

Table 4: body measurements of Infants according to age growth and suckle type.

Infant's body measurements	Type of feeding	4th week (1 month)	8th week (2 month)	20th week (5 month)	48th week (12 month)	Significant	
						T - test	Sig.
Mean of Head perimeter	Breast feeding	39.465	40.332	43.826	46.524	18.94	S
	formula feeding	37.484	38.226	41.196	43.688		
Mean of body length	Breast feeding	58.075	59.751	66.453	74.896	21.13	S
	formula feeding	53.766	55.576	62.815	71.250		
Mean of body Weight	Breast feeding	3.692	4.831	7.135	11.395	4.32	S
	formula feeding	3.571	4.650	6.953	10.932		

S = significant at $P \leq 0.05$ level .

Characteristics of baby mothers

Table (5) shows the characteristic results of mothers for both modes of baby's feeding , where it reveal that 86.4% of breastfeeding mothers were taking supplement drugs compared to 28.6% of formula fed mothers . 31.8% of breastfeeding mothers had low breast milk and 66.7% of formula fed mothers suffering from this condition, so it was the reason for them to change the suckle to formula feeding.Also,86.4% of breastfeeding mothers were found to be underweight due to breastfeeding. For these reasons of low breast milk and reduce of weight , formula fed mothers have 100% dependent on formula milk in feeding her babies.

Table 5: Characteristics of breastfeed mothers and formula feed mothers.

Characteristics of mothers	Breastfeeding mothers				Formula feeding mothers			
	P+ve	%	N-ve	%	P+ve	%	N-ve	%
Taking supplement drugs	57	86.4 %	9	13.6 %	24	28.6 %	60	71.4 %
Low breast milk	21	31.8 %	45	68.2 %	56	66.7 %	28	33.3 %
Change suckle method	0	0%	66	100%	56	66.7 %	28	33.3 %
Weight loss due to breastfeeding	57	86.4 %	9	13.6 %	0	0%	84	100%

Reasons for mothers using formula feeding

All formula feeding , and who changed their lactation from breast to formula milk , had agreed on several reasons for their deciding to formula feed as shown in table (6) . The reason of highest percentage 26.2% was for inadequate breast milk supply , 11.9% for sagging body and chest , 13.1% for losing of their body weight, and 10.7% for Mother sickness , whereas other reasons for formula feeding were at lower percentage (<10%).

Table 6: Reasons for applying formula feeding by mothers.

Reasons	Mother's No. (n=84)	%
Low breast milk supply	22	26.2
Sagging mother's body	10	11.9
Mother's weight loss	11	13.1
Mother sickness	9	10.7
Subsequent pregnancy	6	7.2
Baby sickness	4	4.8
Baby refuse breast milk	5	5.9
Act at doctor's direction	5	5.9
Other reasons	12	14.3

Discussion

Protein components of amino acids are highly in mother's milk ,which makes the baby's growth process more efficient than formula milk. Mother's milk has a high level of the amino acid cysteine, which is missing in infants , making cysteine getting via mother's milk very necessary. Also, mother's milk is rich with protein sugars (aminopolysaccaride) that play vital role in forming of benefit bacteria in infant intestine and increasing the rates of their activity [11]. Mother's milk also characterized by its high lactose sugar content, compared to formula milk , which helps the infant to obtain an easy source of energy necessary for his needs. In addition , lactose helps to metabolite of calcium and phosphorus in the body.

Many studies suggest a relationship between breastfeeding and a child's cognitive development [12]. It has been shown that breastfed infants have an advantage over non- breastfed infants [13].This feature of cognitive development can be explained by two factors: one is the presence of essential long chain polyunsaturated fatty acids and decosahexaenoic acid (DHA), which are essential for brain development [14,15].There is evidence that DHA is important in infant neurological and visual development [16,17]. Breast milk also contains growth factors and hormones that affect brain biochemistry and functional development , such ingredients are not found in formula milk [18,19]. Physical or social interaction associated with breastfeeding may also stimulate cognitive development. Another possible mechanism is that formula feeding is associated with childhood infections and chronic diseases, which can cause growth delays, thus delaying cognitive development until later [20].

The duration of breastfeeding was also important and effective for the development of infants . [21] found that those who were breastfed for more than 6 months were found to have better language and knowledge than those who were breastfed for less than 6 months. Also, [22] full breastfeeding for more than 6 months was associated with increased enjoyment of excellent health and higher energy beyond nine months, whereas those who were fed for less than 4 months had poorer health and lower growth scores. [20] reported that a longer breastfeeding period is associated with a significant increase in both cognitive intelligence and performance , and that breastfed infants are aged 1-6 months old on formula fed infants, where they more likely to walk early up to 12 months of age as well as to affect brain development by stimulating infant's attention and interacting with their environment [23].

The current study showed that the reasons for formula milk was adopted by mothers as a method of baby's feeding differed , such as the lowest breast milk, which appeared in 26.2% of mothers after

they began with breastfed , but they changed breastfed later, as well as 11.9% of the mothers were afraid of getting body saggy from breastfeeding, and some of them thought that formula milk was the same structure as breast milk due to their lack of education. some 86.4% of breastfeeding mothers were taking supportive drugs because they felt with loss of weight due to breastfeeding, whereas the ratio was 28.6% for formula feeding mothers.

The study also showed that the weights of babies on breast milk was higher than that of babies on formula milk, and this was even more pronounced at 12th month of their age, where the difference in average weight was 46g , this was supported by the study of [24], which reported that breastfeeding leads to adequate postpartum weight gain. The study of [25] reported that breastfeeding prevents an infant's malnutrition, overweight and obesity. This may be due to the effects of breast milk components from growth factors that maintain infant's healthy and normal body development [9]. The results of this study was agree with [26], which found that exclusively formula fed infants were significantly less weighted, at six and nine months of birth, than infants who were breastfed only. However, our result disagreed with an earlier study said that formula feeding was associated with weight gain because milk be more concentrated and mothers are force infants to eat and finish all the milk in the infant flask [27].

In terms of height, breastfed babies outperformed their infant counterparts of formula milk by 4-5cm at the full 12 months of their life. This finding was consistent with [28] study that found that exclusively breastfed babies up to 6 months of age were taller than non-exclusively breastfed babies. But a study of [29] found no significant difference in the height of babies who were breastfed or formula fed.

The head perimeter of breastfeeding infants was found higher by 2-3 cm than that of formula fed infants between the 5th month to 12th month. The study of [30] showed that breastfeeding for at least 4 months was associated with an increase in head size. The head size was smaller in infants who were breastfed for less than 30 days. An earlier study on Turkish infants at 6th month of age found that head perimeter was higher in breastfed babies than in formula fed babies [31].

Conclusion

Breastfeeding milk ensures a healthy , ideal infant diet that meets all of the infant’s nutrient needs, as protein components from amino acids are enough to make the baby grow more efficient, in terms of motor activity and skills as well as psychological and cognitive development , socially reflected through improved parent-child relationship. Mother’s milk is rich in aminopolysaccaride , which play a vital role in the formation and activity of useful bacteria in the infant intestine, as well as lactose sugar and unsaturated fatty acids are also high in their contents to provide the child with energy needed for growth and early walking. Also, mother’s milk contains many types of antibodies , phagocyte cells, and lethal enzymes that work together with lactoferin to kill microbes and viruses, giving the child greater immunity to disease. The fat and protein contents of mother’s milk are involved in brain and nervous system formation of the child and have a strong effect on naturally increasing of his height , head size and weight gain without causing the baby’s kidneys to stress, in addition , the vitamin’s content prevent diseases like scurvy and rickets.

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References

1- Azad MB, Vehling L, Chan D, Klopp A, Nickel NC, McGavock JM, Becker AB, Mandhane PJ, Turvey SE, Moraes TJ, Taylor MS. Infant feeding and weight gain: separating breast milk from breastfeeding and formula from food. Pediatrics. 2018 Oct 1; 142(4). doi: 10.1542/peds.2018-1092.

2- Ballard O, Morrow AL. Human milk composition: nutrients and bioactive factors. Pediatric Clinics. 2013 Feb 1; 60 (1):49-74. doi: 10.1016/j.pcl.2012.10.002.

3- Birch EE, Hoffman DR, Uauy R, Birch DG, Prestidge C. Visual acuity and the essentiality of docosahexaenoic acid and arachidonic acid in the diet of term infants. Pediatric research. 1998 Aug; 44(2):201-9. doi: 10.1203/00006450-199808000-00011.

4- Błaszczyk-Bębenek E, Piórecka B, Płonka M, Chmiel I, Jagielski P, Tuleja K, Schlegel-Zawadzka M. Risk factors and prevalence of abdominal obesity among upper-secondary students. International Journal of Environmental Research and Public Health. 2019 May;16(10):1750. doi: 10.3390/ijerph16101750.

5- Coroian A, Răducu C, Mireşan V, Cocan D, Balta I, Longodor AL, Andronie L, Muntean M, Marchiş Z. Physico-chemical composition and antioxidant capacity of buffalo milk. Scientific Bulletin Series F. Biotechnologies. 2019 Jan 1; 23.

6- Couto GR, Dias V, de Jesus Oliveira I. Benefits of exclusive breastfeeding: An integrative review. Nursing Practice Today. 2020 Aug 25. doi.org/10.18502/npt.v7i4.4034.

7- Uauy R, De Andraca I. Human milk and breast feeding for optimal mental development. The Journal of Nutrition. 1995 Aug 1; 125:2278S-80S.

8- Donma MM, Donma O. The influence of feeding patterns on head circumference among Turkish infants during the first 6 months of life. Brain and Development. 1997 Sep 1;19(6):393-7. doi: 10.1016/s0387-7604(97)00041-7.

9- Ferreira HD, Xavier Júnior AF, de Assunção ML, Dos Santos EA, Horta BL. Effect of breastfeeding on head circumference of children from impoverished communities. Breastfeeding Medicine. 2013 Jun 1;8 (3):294-301. doi: 10.1089/bfm.2012.0105.

10- Fields DA, Demerath EW. Relationship of insulin, glucose, leptin, IL-6 and TNF-α in human breast milk with infant growth and body composition. Pediatric obesity. 2012 Aug; 7 (4):304-12. doi: 10.1111/j.2047-6310.2012.00059.x.

11- Innis SM. Polyunsaturated fatty acids in human milk: an essential role in infant development. Adv Exp Med Biol 2004; 554:27-43. doi: 10.1007/978-1-4757-4242-8_5.

12- Committee on the Evaluation of the Addition of Ingredients New to Infant Formula. Infant formula: evaluating the safety of new ingredients. National Academies Press; 2004 Jul 10. DOI: 10.17226/10935.

13- Jasani B, Simmer K, Patole SK, Rao SC. Long chain polyunsaturated fatty acid supplementation in infants born at term. Cochrane database of systematic reviews. 2017(3). doi: 10.1002/14651858.CD000376.pub4.

14- Kent G. Comparing breastfeeding and feeding with infant formula. World Nutrition. 2019 Apr 4;10 (1):100-18. doi.org/10.26596/wn.2019101100-118.

15- Khadivzadeh T, Parsai S. Effect of exclusive breastfeeding and complementary feeding on infant growth and morbidity. East Mediterr Health J. 2004 May 1;10 (3):289-94.

16- Kuchenbecker J, Jordan I, Reinbott A, Herrmann J, Jeremias T, Kennedy G, Muehlhoff E, Mtimuni B, Krawinkel MB. Exclusive breastfeeding and its effect on

growth of Malawian infants: results from a cross-sectional study. Paediatrics and international child health. 2015 Feb 1;35 (1):14-23. doi: 10.1179/2046905514Y.0000000134.

17- Li R, Magadia J, Fein SB, Grummer-Strawn LM. Risk of bottle-feeding for rapid weight gain during the first year of life. Archives of pediatrics & adolescent medicine. 2012 May 1; 166 (5):431-6. doi: 10.1001/archpediatrics.2011.1665.

18- Hanson LÅ. Session 1: Feeding and infant development Breast-feeding and immune function: Symposium on 'Nutrition in early life: new horizons in a new century'. Proceedings of the Nutrition Society. 2007 Aug; 66 (3):384-96. doi: 10.1017/S0029665107005654.

19- Mortensen EL, Michaelsen KF, Sanders SA, Reinisch JM. The association between duration of breastfeeding and adult intelligence. Jama. 2002 May 8; 287 (18):2365-71. doi: 10.1001/jama.287.18.2365.

20- Oddy WH, Kendall GE, Li J, Jacoby P, Robinson M, De Klerk NH, Silburn SR, Zubrick SR, Landau LI, Stanley FJ. The long-term effects of breastfeeding on child and adolescent mental health: a pregnancy cohort study followed for 14 years. The Journal of pediatrics. 2010 Apr 1; 156 (4):568-74. doi: 10.1016/j.jpeds.2009.10.020.

21- Elgzar WT, Al-Thubaity DD, Alshahrani MA, Essa RM, Ibrahim HA. The relationship between maternal ideation and exclusive breastfeeding practice among Saudi nursing mothers: a cross-sectional study. Nutrients. 2023 Mar 31; 15 (7):1719. doi: 10.3390/nu15071719.

22- Péneau S, Hercberg S, Rolland-Cachera MF. Breastfeeding, early nutrition, and adult body fat. The Journal of pediatrics. 2014 Jun 1;164(6):1363-8. doi: 10.1016/j.jpeds.2014.02.020.

23- Pollock JI. Long-term associations with infant feeding in a clinically advantaged population of babies. Dev Med Child Neurol 1994 36(5): 429-40. doi: 10.1111/j.1469-8749.1994.tb11869.x.

24- Heikkilä K, Sacker A, Kelly Y, Renfrew MJ, Quigley MA. Breast feeding and child behaviour in the Millennium Cohort Study. Archives of disease in childhood. 2011 Jul 1;96(7):635-42. doi: 10.1136/adc.2010.201970.

25- Scherbaum V, Srour ML. The Role of Breastfeeding in the Prevention of Childhood Malnutrition. World review of nutrition and dietetics. 2016 May 19;115:82-97. doi: 10.1159/000442075.

26- Singh D, Devi N, Raman TR. Exclusive breast feeding in low birth weight babies. Medical Journal Armed Forces India. 2009 Jul 1;65(3):208-12. doi: 10.1016/S0377-1237(09)80004-X.

27- Smithers L, McIntyre E. The impact of breastfeeding: Translating recent evidence for practice. Australian family physician. 2010 Oct;39(10):757-60.

28- Nketiah-Amponsah E, Boakye-Yiadom L, Agyemang M. The effect of maternal education on child health: some evidence from Ghana. International Journal of Economics and Business Research. 2016;11 (4):366-85.
DOI:10.1504/IJEBR.2016.077027 .

29- Weli SM. Effect of Exclusive Breast Feeding on Infants Growth and Comparison with other Types of Feeding in Sulaimani City, Kurdistan, Iraq. Iraqi Journal of Pharmaceutical Sciences. 2021; 30 (1):76-80.

30- Walker SP, Wachs TD, Grantham-McGregor S, Black MM, Nelson CA, Huffman SL, Baker-Henningham H, Chang SM, Hamadani JD, Lozoff B, Gardner JM. Inequality in early childhood: risk and protective factors for early child development. The lancet. 2011 Oct 8;378

(9799):1325-38. doi: 10.1016/S0140-6736(11)60555-2.

31- Wallenborn JT, Hyland C, Sagiv SK, Kogut KR, Bradman A, Eskenazi B. Prenatal exposure to polybrominated diphenyl ether (PBDE) and child neurodevelopment: The role of breastfeeding duration. Science of the Total Environment. 2024 Apr 15; 921:171202. doi: 10.1016/j.scitotenv.2024.171202./j.scitotenv.2024.171202.

تركيب حليب الأم والحليب الصناعي وتأثيرهما على خصائص صحة ونمو الاطفال الرضع في مدينة البصرة , العراق

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الخلاصة

الهدف: أجريت دراسة وصفية وعملية على عينة عشوائية من 150 رضيعاً أُخذت من مراكز الرعاية الصحية للأطفال في محافظة البصرة (العراق)، ممن كانوا يرضعون على حليب الأم أو الحليب الصناعي المجفف، وضمت العينة ذكورمع إناث بعمر شهر واحد تمت متابعة حالتهم طوال 12 شهراً من حياتهم لغرض تبيان أثر نوع الحليب على صحة الطفل ونموه وخصائص جسمه. **النتائج:** أظهرت أبرز النتائج أن جميع الرضع حصلوا على لقاحاتهم الخاصة. كان 40.9 ٪ من الأطفال الذين يرضعون من الثدي نشطين ديناميكيًا، في حين كان 100 ٪ من الأطفال الذين يرضعون الحليب الصناعي غير نشطين وخاملين. وكان جميع الأطفال الذين يرضعون رضاعة طبيعية لا يرفضون ثدي الام بينما كان الأطفال الذين يرضعون حليب صناعي يرفضون الرضاعة من الزجاجة. كما أن 27.3 ٪ من اطفال الرضاعة الطبيعية عانوا من الإسهال والقيء مقارنة بـ 72.7 ٪ لم يكن لديهم، في حين أن النسب المقابلة كانت 75 ٪ و 25 ٪ عند اطفال الرضاعة الصناعية. علاوة على ذلك، تأخر 27.3% من أطفال الرضاعة الطبيعية في المشي مقارنة بـ 67.9% عند اطفال الرضاعة الصناعية. بالنسبة لقياسات الجسم ، كان الأطفال المرضعون من الثدي يزدادون وزناً أكثر نسبيا من الأطفال المرضعين من الحليب الصناعي، حيث كان متوسط زيادة الوزن 12-18 غرام في 4-20 أسبوعاً وزاد إلى 46 غرام في 48 أسبوعاً بعد الولادة. لصالح الأطفال الذين يرضعون من الثدي، كان معدل نمو محيط الرأس 2-3 سم في الأشهر من 5-12 وكان معدل زيادة طول الجسم 4-5 سم شهريا على طول سنة كاملة من عمرهم. **الاستنتاجات:** يضمن حليب الأم نظام غذائي صحي مثالي للرضيع يلبي جميع احتياجات الرضيع التغذوية التي تساعد الطفل على النمو بكفاءة أكبر من حيث النشاط الحركي والمهاري، وكذلك النمو النفسي والمعرفي، وهو ما ينعكس اجتماعيا من خلال تحسين العلاقة بين الوالدين والطفل. وله تأثير قوي على الزيادة الطبيعية في الوزن والطول وحجم الرأس ، ويزيد من المناعة ويقي من أمراض مثل داء الإسقربوط والكساح .

الكلمات المفتاحية: حليب الأم ، الحليب الصناعي ، خصائص النمو ، مدينة البصرة.