

---

---

# INFANT FEEDING SURVEY



**2000**

---

---

**Authors: Melanie Besculides, DrPH, MPH<sup>1</sup>  
Karine Grigoryan, PhD, MPH<sup>2</sup>  
Fabienne Laraque, MD, MPH<sup>1</sup>**

<sup>1</sup> Office of Family Health,  
New York City Department of Health

<sup>2</sup> Health Research Training Program,  
New York City Department of Health



**Office of Family Health  
New York City Department of Health  
2 Lafayette Street, 18th Floor, Box 34A  
New York, New York 10007  
(212) 442-1740  
(212) 442-1789 (Fax)**

---

---

---

---

## INFANT FEEDING SURVEY 2000

**Authors: Melanie Besculides, DrPH, MPH<sup>1</sup>  
Karine Grigoryan, PhD, MPH<sup>2</sup>  
Fabienne Laraque, MD, MPH<sup>1</sup>**

---

<sup>1</sup> Office of Family Health, New York City Department of Health

<sup>2</sup> Health Research Training Program, New York City Department of Health

---

### INTRODUCTION

The importance of breastfeeding in enhancing the development of an infant's immune system and protecting the newborn against a variety of infections is well recognized. Many studies have shown that infant morbidity and mortality are reduced by breastfeeding (1-3). It has been estimated that if infants were exclusively breastfed, 1.5 million infant deaths worldwide would be prevented each year (4).

Breastfed infants are hospitalized less often, have a lower risk of gastrointestinal illness, urinary tract infection, invasive *Haemophilus influenzae* infection, respiratory infections, otitis media, and neonatal sepsis compared to formula-fed infants (5-13). Mechanisms involved in the protection against disease are multiple. Breast milk supplements the newborn's immature immune system with a variety of immune products and cells, which include immunoglobulins (mainly IgA), white blood cells (neutrophils, macrophages, and lymphocytes), cytokines, complex oligosaccharides (anti-adherence factors against microorganisms), hormones, antisecretory factors (protect against diarrhea), lactoferrin (suppresses bacterial growth), and anti-inflammatory factors (14).

Recent research highlights the importance of breastfeeding not only in protecting infants from infectious diseases, but also in decreasing the incidence of allergies and atopic disease, sudden infant death syndrome, insulin-dependent diabetes mellitus, Hodgkin's disease and lymphoma, childhood obesity, childhood acute leukemia, and asthma (5, 15-19). Breastfeeding is also associated with increased bone mass in prepubertal children (20). The effects are most significant for infants breastfed for at least 3 months.

Breastfeeding also influences the orofacial development of infants. For example, short breastfeeding duration and early bottle-feeding is positively associated with posterior crossbite (21).

Breastfeeding benefits are not limited to the infant, there are numerous health advantages for the nursing mother as well. For example, research suggests that breastfeeding reduces the risk of epithelial ovarian cancer and premenopausal breast cancer (22-24). In addition, breastfeeding increases levels of oxytocin, which results in less postpartum bleeding (25-27). Women who breastfeed also return to their pre-pregnancy weight faster than those who do not (28, 26). Furthermore, research suggests that breastfeeding is emotionally gratifying for the mother, and helps form a positive emotional union between infant and mom (29, 27). Finally, breastfeeding is beneficial to society, providing both economic and social benefits. For example, it reduces health care costs and employee absenteeism due to child illness (16). Breastfeeding is convenient, eliminating the need to carry and clean baby bottles, and is economically advantageous, with no need to purchase infant formula.

Despite the benefits of breastfeeding, there are a few situations when breastfeeding is not encouraged by the American Academy of Pediatrics (AAP), who has promoted breastfeeding as the best form of infant nutrition since 1948. Infants of women with untreated active tuberculosis, those who use illegal drugs, those infected with the human immunodeficiency virus (HIV), and infants with galactosemia should not be breastfed (16). Women who take antineoplastics, certain anticonvulsants, and ergot alkaloids, should not breastfeed (30). In addition, levels of cyclosporine, amiodarone, and lithium, should be monitored closely in

---

---

breastfeeding women who take these medications. Use of radioactive isotopes for diagnostic purposes requires temporary cessation of breastfeeding (30).

With these exceptions, all infants, including preterm and sick infants should be breastfed (16). The AAP guidelines advocate breastfeeding an infant within the first hour after birth, with exclusive (i.e., infant receives no other food or fluids, including water), on-demand breastfeeding as the optimal nutrition for the first six months of life. The only supplementation during these six months should be with iron and vitamin D in select populations. Specifically, infants who are not exposed to adequate sunlight or whose mothers are deficient in vitamin D should be supplemented with vitamin D; infants whose mothers are anemic or have low iron stores should be supplemented with iron. It is recommended that breastfeeding continue for at least 12 months, and after that, as long as it is mutually desired. Iron-enriched solid food should be gradually added to the breast milk diet from six months of age to one year.

The Healthy People 2000 objective for the breastfeeding rate in the early postpartum period was 75 percent, this goal remains for the 2010 objectives (31, 32). One method to reach this goal is to institute hospital policies that promote breastfeeding. According to a joint statement by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) (33), facilities that provide maternity services and newborn care should: (1) have a breastfeeding-friendly policy in writing that describes care, education, and training for expectant mothers, new mothers, and infants that all staff are informed of, (2) provide skills training for staff to implement the policy, (3) educate all pregnant women about breastfeeding benefits, (4) help mothers begin breastfeeding within a half-hour of birth, (5) show new mothers proper breastfeeding techniques and teach them how to maintain lactation when separated from their infant, (6) not give newborns anything other than breast milk unless medically indicated, (7) encourage rooming-in, allowing mothers and newborns to be together 24 hours a day, (8) promote on-demand breastfeeding, (9) not give pacifiers to breastfeeding infants, and (10) refer mothers to breastfeeding support groups upon discharge.

In the late 1970s, the New York City Department of Health (NYCDOH) made a commitment to increase breastfeeding throughout New York City. At that time, teams from the NYCDOH Bureau of Maternity Services and Family Planning (BMSFP) made hospital visits to encourage hospital staff to facilitate breastfeeding (34). In 1984, The New York State DOH instituted regulation NYCRR 405.2, requiring hospitals with maternity services to designate a person trained in breastfeeding physiology and management, typically referred to as a lactation coordinator, and develop and implement written breastfeeding policies and procedures (35). This regulation was renewed in 1997 (36)

In order to monitor early infant feeding patterns in New York City, the BMSFP began administering the Infant Feeding Survey, which records feeding practices among mothers of infants delivered at New York City hospitals. The first survey was undertaken in 1979, with a follow-up study in 1980 and then subsequently every 2 years. The survey collects data on feeding practices in a sample of births in a calendar year. The Infant Feeding Survey 2000 was conducted in May and June of 2000 by the Office of Family Health (formerly the Bureau of Maternity Services and Family Planning) to determine the early feeding patterns of infants born in city hospitals over a two-month period, and to compare these patterns to the Healthy People 2000 and 2010 objectives for early postpartum breastfeeding.

## **METHODS**

### **Data Collection**

A representative (either the Lactation Coordinator, the Director of Nursing or the equivalent) from the 46 New York City hospitals with obstetric units was contacted to provide data for the Survey. A letter was sent in early April to all study sites announcing the 2000 Survey and introducing the Survey's coordinator. At the end of April, the data collection tools for each month (May and June), and instructions on how to complete them were sent.

The hospital representative was instructed to record daily the total number of infants discharged from the normal newborn nursery, how they were being fed at the time of discharge (breast milk only, formula only,

---

---

or both), and whether they were private (covered by private insurance) or service patients (covered by Medicaid or no insurance).

Follow-up phone calls were made to ensure that the letters were received and instructions understood. Hospitals were contacted repeatedly to encourage them to submit data. Hospitals that sent data with errors were contacted to correct the errors. All but one hospital (98%) submitted complete data.

## Data Analysis

All patients were grouped into *service* and *private* categories. *Private* patients were classified as having private insurance and private physicians; all other patients were categorized as *service* patients, including those covered by Medicaid and those without insurance.

Infants of patients were categorized as being “Exclusively Breastfed”, “Breast & Formula Fed”, and “Formula Fed Only”. The first two categories were further classified into an *any breastfeeding* group, which included infants who were exclusively breastfed and those who were fed a combination of breastmilk and formula.

All hospitals were classified as *public* (municipal) or *voluntary*. Infant feeding patterns were compared between categories of patients (service, private), hospitals (public, voluntary), as well as according to the presence of a lactation coordinator in the hospital.

Data were entered and analyzed using Epi-Info software. Statistical significance was measured by  $\chi^2$  tests to determine whether a difference between groups represented a real difference in breastfeeding patterns.

## RESULTS

Of the 45 hospitals included in the final analysis, 34 were voluntary and 11 were public. Only one hospital did not employ a lactation coordinator at the time of the Survey. There were 16,932 infants in the sample representing approximately 80.0% of all

reported live births in the city during the study period. Of the infants sampled, 5,305 (31.3%) were being exclusively breastfed, 6,189 (36.6%) were fed by a combination of breast milk and formula, and the remaining 5,438 (32.1%) were receiving formula only. Therefore, 67.9% of infants received some breast milk (i.e., *any breastfeeding*, see Table 1).

The majority of infants (13,900; 82.1%) were born in voluntary hospitals, while only 3,032 (17.9%) were born in public institutions (Table 1). An approximately equal number of individuals were classified as private, 8,542 (50.4%) and service, 8,390 (49.6%) patients (Table 1). However, this differed by hospital type: in voluntary hospitals 61.3% of patients were private patients, whereas in public hospitals less than one percent were private (20 patients) (Table 2). Only 463 (2.7%) infants were born in the hospital without a lactation coordinator (Table 1).

## Type of Hospital

Infant feeding patterns varied between public and voluntary hospitals. Only 21.1% of infants born in public hospitals received exclusive breastfeeding as compared to 33.6% of infants born in voluntary hospitals (Table 1). An infant discharged from a voluntary hospital was 1.6 times more likely to be exclusively breastfed than an infant discharged from public hospital (RR=1.59, 95% CI 1.48, 1.71,  $p < 0.001$ ).

The difference between type of hospital was less pronounced when infants receiving any breastmilk were examined. In public hospitals, 64.9% of infants received “any breastfeeding” and in voluntary hospitals 68.5% received “any breastfeeding” (Table 1).

## Type of Medical Insurance

A disparity between feeding categories according to type of medical insurance was also present. The percentage of service and private patients who exclusively breastfed their infants were 22.9% and 39.6%, respectively (Table 1). An infant born to a mother with private insurance was 1.7 times more likely to be exclusively breastfed than an infant born to a mother

classified as a service patient (RR=1.73, 95% CI 1.65, 1.82,  $p < 0.001$ ).

This discrepancy between feeding categories according to type of insurance remained statistically significant when the data were stratified by type of hospital. In voluntary hospitals, 39.6% of private patients breastfed exclusively compared to 24.0% of service patients (RR=1.65, 95% CI 1.56, 1.74,  $p < 0.001$ ) (Table 2). Note that 73.6% of private infants discharged from voluntary hospitals received *any breastfeeding*, which is close to the Healthy People 2000 objective (Table 2).

Of the 20 private patients discharged from public hospitals, 60.0% were exclusively breastfeeding their infant, compared to 20.9% of service patients (RR=2.87, 95% CI 2.00, 4.14,  $p < 0.001$ ) (Table 2). The differences

in breastfeeding between private and service patients remained significant in both voluntary and public hospitals when grouping infants receiving *any breastfeeding* (Table 2).

### Presence of a Lactation Coordinator

As mentioned previously, only one hospital did not have a designated lactation coordinator on staff during the data collection period. The rate of exclusive breastfeeding in the hospital without a lactation coordinator was 22.4%, compared to 31.6% for hospitals with a lactation coordinator (Table 1). However, the rate of *any breastfeeding* was similar in hospitals with a lactation coordinator and in the hospital without one (67.8% and 71.3%, respectively) (Table 1).

**TABLE 1**

METHOD OF INFANT FEEDING AT TIME OF HOSPITAL DISCHARGE				
	Exclusively Breastfed Number (%)	Breast & Formula Fed Number (%)	Formula Fed Only Number (%)	Any Breastfeeding* Number (%)
<b>Total</b> (n = 16932: 100%)	<b>5305 (31.3)</b>	<b>6189 (36.6)</b>	<b>5438 (32.1)</b>	<b>11494 (67.9)</b>
<b>Hospital Type</b>				
Voluntary (n=13900: 82.1%)	4664 (33.6)	4862 (34.9)	4374 (31.5)	9526 (68.5)
Public (n=3032: 17.9%)	641 (21.1)	1327 (43.8)	1064 (35.1)	1968 (64.9)
RR (95% CI)	1.59 (1.48, 1.71)	0.80 (0.76, 0.84)	0.90 (0.85, 0.95)	1.06 (1.03, 1.09)
<b>Patient Type</b>				
Private (n=8542: 50.4%)	3387 (39.6)	2904 (34.0)	2251 (26.4)	6291 (73.6)
Service (n=8390: 49.6%)	1918 (22.9)	3285 (39.1)	3187 (38.0)	5203 (62.0)
RR (95% CI)	1.73 (1.65, 1.82)	0.88 (0.84, 0.91)	0.69 (0.66, 0.73)	1.19 (1.16, 1.21)
<b>Lactation Coordinator</b>				
Present (n=16469: 97.3%)	5202 (31.6)	5962 (36.2)	5305 (32.2)	11164 (67.8)
Not present (n=463: 2.7%)	103 (22.4)	227 (48.9)	133 (28.7)	330 (71.3)
RR (95% CI)	1.42 (1.20, 1.69)	0.74 (0.67, 0.81)	1.12 (0.97, 1.30)	0.95 (0.90, 1.01)

\*Any Breastfeeding = Exclusively Breastfed and Breast & Formula Fed

TABLE 2

BREASTFEEDING BY PATIENT TYPE WITHIN HOSPITAL TYPE			
	Exclusively Breastfed Number (%)	Any Breastfeeding* Number (%)	Total Number
<b>Voluntary Hospitals</b>			
Private Patients	3375 (39.6)	6272 (73.6)	8522
Service Patients	1289 (24.0)	3254 (60.5)	5378
RR (95% CI)	1.65 (1.56, 1.74)	1.22 (1.19, 1.25)	
<b>Public Hospitals</b>			
Private Patients	12 (60.0)	19 (95.0)	20
Service Patients	629 (20.9)	1949 (64.7)	3012
RR (95% CI)	2.87 (2.00, 4.14)	1.47 (1.32, 1.63)	

\*Any Breastfeeding = Exclusively Breastfed and Breast & Formula Fed

### Breastfeeding Trends

From 1980 to 1998, the percentage of exclusive breastfeeding increased from 25.0% to 31.0%. In 2000, the rate of exclusive breastfeeding remained at 31.0% (Table 3). From 1980 to 2000 the percentage of combined feeding increased from 8.0% to 37.0%, a large proportion of that increase, 30.0% to 37.0%, occurred between 1998 and 2000. From 1980 to 2000 the percentage of *any breastfeeding* increased from

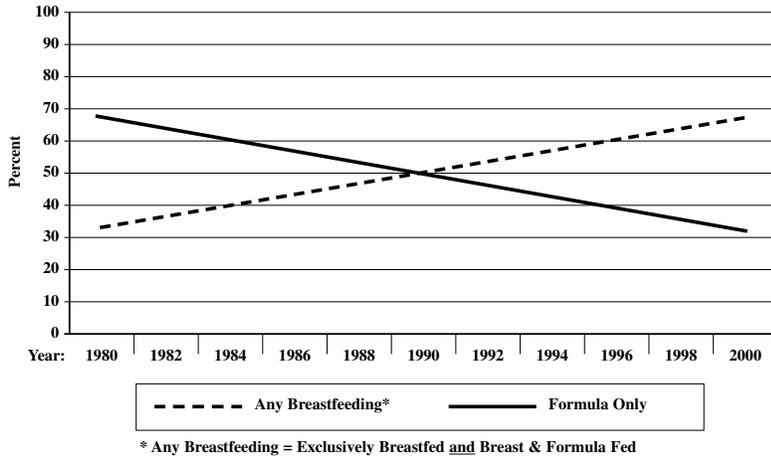
33.0% to 68.0% (Table 3, Graph 1), while the proportion of infants fed only formula decreased from 67.0% to 32.0%. Between 1998 and 2000, a sharp increase in the rates of *any breastfeeding* among public hospital patients is evident (Graph 2). Increasing rates of *any breastfeeding* are also seen in voluntary hospitals, as well as among service and private patients (Graphs 2-3), however, private patients began to increase breastfeeding earlier than service patients (Graph 3).

TABLE 3

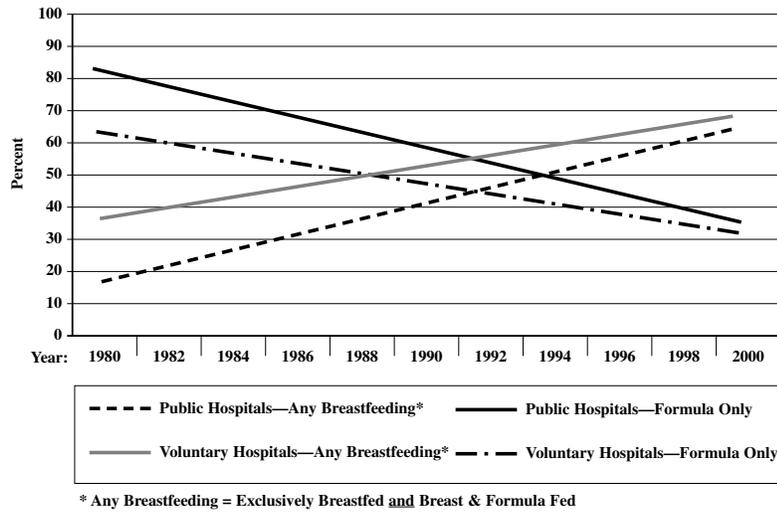
METHOD OF INFANT FEEDING AT TIME OF DISCHARGE FROM HOSPITAL, NEW YORK CITY, 1980-2000									
Year	Infants Surveyed	Exclusively Breastfed		Breast & Formula Fed		Formula Fed Only		Any Breastfeeding*	
		Number	(%)	Number	(%)	Number	(%)	Number	(%)
1980	7232	1827	25	545	8	4860	67	2372	33
1982	15121	4158	27	1228	8	9735	64	5386	36
1984	15945	4877	31	1667	10	9401	59	6544	41
1986	17216	5773	34	1580	9	9863	57	7353	43
1988	18213	6124	34	2212	12	9877	54	8336	46
1990	19419	6030	31	2824	15	10565	54	8854	46
1992	18953	5635	30	3296	17	10022	53	8931	47
1994	17737	5898	33	3332	19	8507	48	9230	52
1996	16383	5530	34	4001	24	6852	42	9531	58
1998	16508	5178	31	4850	30	6480	39	10028	61
2000	16932	5305	31	6189	37	5438	32	11494	68

\*Any Breastfeeding = Exclusively Breastfed and Breast & Formula Fed

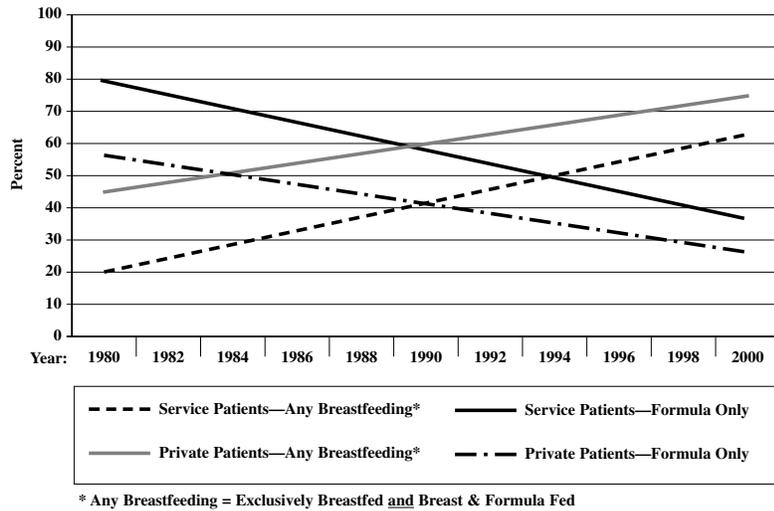
**GRAPH 1. METHOD OF INFANT FEEDING AT TIME OF DISCHARGE FROM HOSPITAL, NEW YORK CITY, 1980—2000**



**GRAPH 2. METHOD OF INFANT FEEDING AT TIME OF DISCHARGE BY HOSPITAL TYPE, NEW YORK CITY, 1980—2000**



**GRAPH 3. METHOD OF INFANT FEEDING AT TIME OF DISCHARGE BY PATIENT TYPE, NEW YORK CITY, 1980—2000**



---

---

## DISCUSSION AND RECOMMENDATIONS

In New York City, the proportion of infants receiving at least some breast milk upon discharge from the hospital has continued to increase over the past decade; exclusive breastfeeding increased for the majority of the decade, and bottle feeding steadily decreased. These advances may be the result of increased awareness that breastfeeding is the healthiest option for infants and changing societal views regarding breastfeeding and its acceptance. Despite these great strides, the present rate of *any breastfeeding* (67.9%) falls short of the Healthy People 2000 and 2010 objectives of 75.0%.

The analysis revealed that private patients, with an overall breastfeeding rate of 73.6% (*any breastfeeding*), were closer to reaching the objective than service patients (62.0%). The disparity in breastfeeding rates among service and private patients is not likely to be the result of hospital type, as the rates of exclusive and *any breastfeeding* among private patients discharged from public hospitals and those discharged from voluntary hospitals were significantly higher than the rates of exclusive and of *any breastfeeding* among service patients discharged from public and voluntary hospitals.

It is important to note that the difference in the rates of any breastfeeding between public and voluntary hospitals has decreased from previous years and that the rates of any breastfeeding have steadily increased in all categories of patients during the last years. However, service patients appear to be about 10 years behind private patients in the trend of increased breastfeeding.

Several factors could explain the difference in breastfeeding rates between service and private patients, with service patients possibly having: a) less knowledge about breastfeeding benefits due to poorer quality of prenatal care, b) lack of support for breastfeeding from providers and family members, c) early return to work or school, and d) availability of free infant formula. Insurance status is also likely to systematically vary with factors such as income, education, age, and race/ethnicity, which are known to influence breast-

feeding rates. Sociodemographic variables such as these were not examined in the present study.

Although differences in breastfeeding rates between public and voluntary hospitals may partially be explained by insurance status of patients in those hospitals, it does not completely account for the discrepancy. Anecdotal evidence suggests that lack of consistent advice from health care providers, poor health care worker skills, and noise and embarrassment in non-private rooms negatively influence the initiation and continuation of breastfeeding. It is possible that private patients in public hospitals receive different rooms and different care than service patients in the same hospitals. It is also possible that service patients in voluntary hospitals receive different rooms and care than private patients in the same hospitals. These issues need to be examined and addressed.

The presence of a lactation coordinator significantly increased the rate of exclusive breastfeeding but had little effect on the rate of *any breastfeeding*. This result must be interpreted with caution, as only one hospital did not have a designated lactation coordinator. However, this finding suggests that simply having a person to educate new mothers about breastfeeding increased exclusive breastfeeding rates, regardless of the content or quality of the education (which was not measured).

This study examined infant feeding practices at time of hospital discharge. Research suggests that breastfeeding rates decline substantially in the early postpartum period (2, 6, 12, 37, 38), and very few infants meet the AAP standard of exclusive breastfeeding for six months (5). Therefore, efforts need to be undertaken to increase the proportion of women who initiate breastfeeding, to assess the length they breastfeed, and the reasons they stop.

The first two weeks of life are critical to establish breastfeeding. To improve the likelihood that women initiate and continue breastfeeding, support for breastfeeding should therefore begin before pregnancy and continue after newborn discharge. Breastfeeding guidance, including counseling and assistance with

---

---

breastfeeding soon after delivery, is positively associated with initiation of breastfeeding (39, 31). The availability of trained individuals, such as lactation coordinators, nurses, obstetricians and pediatricians, to provide guidance both during prenatal care visits and in the hospital at time of delivery should be an integral component of any intervention that seeks to improve rates of breastfeeding. Complete support for breastfeeding must be clearly expressed by obstetric and pediatric physicians and nurses who should be trained to provide breastfeeding education.

Research suggests that providing commercial formula promotional materials and formula samples during prenatal care (40) and providing formula supplementation in the hospital (38) are associated with decreased duration of breastfeeding. Therefore, these practices should be strictly avoided. New mothers should be given phone numbers and/or website addresses they can call or log on to for breastfeeding help and support before they are discharged from the hospital. Providing a postpartum home visit by a nurse or health educator to support breastfeeding mothers, answer their questions, and address their concerns should also be considered to increase duration of breastfeeding.

Familial, social, cultural, and economic factors contribute to a mother's decision to initiate and continue breastfeeding (6, 38, 37). To improve rates of breastfeeding initiation and maintenance, these factors must be considered by those providing breastfeeding education. For example, the roles that family and society play in the acceptance and support of breastfeeding and their impact on a woman's decision to initiate and continue breastfeeding, including perceived acceptance of breastfeeding in the work environment, must be addressed with each new mother. Anecdotal evidence suggests that teenagers, for example, are concerned about the impact of breastfeeding on the shape and size of their breasts, their weight, and perception of friends and family, and these factors decrease their willingness to breastfeed. Identifying barriers to breastfeeding among different populations is vital to the intervention development process.

Research suggests that duration of breastfeeding is associated with length of maternity leave, specifically, shorter maternity leave was found to be associated with shorter duration of breastfeeding in a study in Brazil (41). Employers should therefore be encouraged to increase the length of paid maternity leave to combat this problem. They should also provide areas for women to extract and store breast milk once they return to work, as research in Spain found that providing such amenities was associated with longer duration of breastfeeding (42).

Potential decreases in absenteeism due to child illness should be stressed to employers as an incentive to developing breastfeeding-friendly work policies. Stores, especially those that market infant products such as toys and clothing, should also designate space for women to breastfeed or pump breast milk. Women should not be expected to complete these activities in a bathroom.

The media can also play an important role in advocating breastfeeding. They should use their power and presence to explain the benefits of breastfeeding and portray breastfeeding in positive terms, as typical, normal, and acceptable.

## **CONCLUSION**

New York City has made great strides in improving the rates of breastfeeding over the years. Healthcare providers and public health professionals have undoubtedly played an important role in educating women and society about the benefits of breastfeeding. Their continued effort and collaboration is vital to maintain current gains in breastfeeding, to improve the rates further, and to ultimately reduce infant morbidity and mortality in New York City.

---

---

## REFERENCES

1. Huffman SL, Combest C. Role of breast-feeding in the prevention and treatment of diarrhoea. *J Diarrhoeal Dis Res* 1990; 8:68-81.
2. Kasla RR, Bavdekar SB, Joshi SY, Hathi GS. Exclusive Breastfeeding: Protective efficacy. *Indian J Pediatr* 1995; 62:449-53.
3. Orlando S. The immunologic significance of breast milk. *J Obstet Gynecol Neonatal Nurs* 1995; 24:678-83.
4. Unicef website [www.unicef.org/breastfeed](http://www.unicef.org/breastfeed) Accessed October 2000.
5. Haller CA, Simpser E. Breastfeeding: 1999 perspective. *Curr Opin Pediatr* 1999; 11:379-83.
6. Howie PW, Forsyth JS, Ogston SA, Clark A, du V Florey C. Protective effect of breastfeeding against infection. *BMJ* 1990; 300:11-6.
7. Pisacane A, Graziano L, Mazzarella G, Scarpellino B, Zona G. Breast-feeding and urinary tract infection. *J Pediatr* 1992; 120:87-9.
8. Silfverdal SA, Bodin L, Huggosson S, Garpenholt O, Werner B, Esbjorner E. et al. Protective effect of breastfeeding on invasive *Haemophilus influenzae* infection: A case-control study in Swedish preschool children. *Intern J Epidem* 1997; 26:443-50.
9. Nafstad P, Jaakkola JJK, Hagen JA, Botten G, Kongerud J. Breastfeeding, maternal smoking and lower respiratory tract infections. *Curr Respir J* 1996; 9:2623-9.
10. Wang YS, Shi YW. The effect of exclusive breast-feeding on development and incidence of infection in infants. *JHL* 1996; 12:27-30.
11. Wright AL, Bauer M, Maylor A, Sutcliffe E, Clark L. Increasing breastfeeding rates to reduce infant illness at the community level. *Pediatrics* 1998; 101:837-44.
12. Bass SM, Groer MW. Relationship of breastfeeding and formula-feeding practices with infant health outcomes in an urban poor population. *J Perinat Neonat Nurs* 1997; 11(2): 1-9.
13. Ashraf RN, Jalil F, Zaman S, Karlberg J, Khan SR, Lindblad BS, Hanson LA. Breast feeding and protection against neonatal sepsis in a high risk population. *Arch Dis Child* 1991;66(4):488-490.
14. Wold AE, Hanson LA. Defense factors in human milk. *Curr Opin Gastro* 1994; 10:652-8.
15. Kalliomaki M, Ouwehand A, Arvilommi H, Kero P, Isolauri E. Transforming growth factor- $\beta$  in breast milk: A potential regulator of atopic disease at an early age. *J Allergy Clin Immunol* 1999; 1251-7.
16. American Academy of Pediatrics Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 1997; 100:1035-9.
17. Shu XO, Linet MS, Steinbuch M, Wen WQ, Buckley JD, Neglia JP et al. Breast-feeding and risk of childhood acute leukemia. *J Natl Cancer Inst* 1999; 91:1765-72.
18. Oddy WH. Breastfeeding and asthma in children: Findings from a West Australian study. *Breastfeed Rev* 2000; 8(1): 5-11.
19. Campbell C. Childhood obesity. Breast feeding is important. *BMJ* 2000; 320:1401.
20. Jones G, Riley M, Dwyer T. Breastfeeding in early life and bone mass in prepubertal children: A longitudinal study. *Osteoporos Int* 2000; 11:146-52.
21. Karjalainen S, Ronning O, Lapinleimu H, Simell O. Association between early weaning, non-nutritive sucking habits and occlusal anomalies in 3-year-old Finnish children. *Int J Paediatr Dent* 1999; 9(3): 169-73.

- 
- 
22. Gwinn ML, Lee NC, Rhodes PH, Layde PM, Rubin GL. Pregnancy, breast feeding, and oral contraceptives and the risk of epithelial ovarian cancer. *J Clin Epidemiol* 1990; 43(6): 559-68.
  23. Rosenblatt KA, Thomas DB. Prolonged lactation and endometrial cancer. *Int J Epidemiol* 1995; 24(3): 499-503.
  24. Newcomb PA, Storer BE, Longnecker MP, Mittendorf R, Greenberg R, Clapp RW et al. Lactation and a reduced risk of premenopausal breast cancer. *N Engl J Med* 1994; 330: 81-7.
  25. Chua S, Arulkumaran S, Lim I, Selamat N, Ratnam SS. Influence of breastfeeding and nipple stimulation on postpartum uterine activity. *Br J Obstet Gynecol* 1994;101:804-805.
  26. Dermer A. Breastfeeding and women's health. *J Women Health* 1998; 7:427-33.
  27. Wilmoth TA, Elder JP. An assessment of research on breastfeeding promotion strategies in developing countries. *Soc Sci Med* 1995;41(4):579-594.
  28. Dewey KG, Heinig MJ, Nommsen LA. Maternal weight-loss patterns during prolonged lactation. *Am J Clin Nutr* 1993;58(2):162-166.
  29. Zetterstrom R. Breastfeeding and infant-mother interaction. *Acta Paediatr* 1999; Suppl 430: 1-6.
  30. Moretti ME, Lee A, Ito S. Which drugs are contraindicated during breastfeeding? Practice Guidelines. *Canadian Family Physician* 2000;46:1753-1756.
  31. Public Health Service. Healthy People 2000: national health promotion and disease prevention objectives: full report, with commentary. Washington, DC: U.S. Department of Health and Human Services, Public Health Service, 1991: DHHS publication no. (PHS) 91-50212.
  32. Healthy People 2010: Objectives for Improving Health. U.S. Department of Health and Human Services, Public Health Service, 2000.
  33. World Health Organization. Protecting, promoting and supporting breast-feeding: The special role of maternity services. A joint WHO/UNICEF Statement, Geneva, Switzerland: WHO 1989; 13-8.
  34. Rosenberg KD, McMurtrie C, Kerker BD, Na Y, Graham EH. Breast-feeding initiation in New York City, 1979 to 1996. *Am J Public Health* 1998; 88:1850-2.
  35. New York State Code in Support of breastfeeding (1984). Chapter V, subchapter A, article 2, part 405 Hospitals Minimum Standards, section 405.8
  36. New York State Department of Health website [www.health.state.ny.us/nysdoh/phforum/nycrr10.htm](http://www.health.state.ny.us/nysdoh/phforum/nycrr10.htm) Accessed October 2001.
  37. Bruce NG, Khan Z, Olsen ND. Hospital and other influences on the uptake and maintenance of breast-feeding: The development of infant feeding policy in a district. *Public Health* 1991;105(5):357-68.
  38. Samuels SE, Margen S, Schoen EJ. Incidence and duration of breastfeeding in a health maintenance organization population. *Am J Clin Nurs* 1985;42(3):504-10.
  39. Ahluwalia IB, Tessaro I, Grummer-Strawn LM, MacGowan C, Benton-Davis S. Georgia's breast-feeding promotion program for low-income women. *Pediatrics* 2000;105(6). [www.pediatrics.org/cgi/content/full/105/6/e85](http://www.pediatrics.org/cgi/content/full/105/6/e85)
  40. Howard C, Howard F, Lawrence R, Andresen E, DeBlicke E, Weitzman M. Office prenatal formula advertising and its effect on breast-feeding patterns. *Obstet Gynecol* 2000;95(2):296-303.

---

---

41. Escriba AV, Mas PR, Colomer RC. The duration of breast feeding and work activity. *An Esp Peditr* 1996;44(6):437-441.

42. Rea MF, Venancio SI, Batistia LE, dos Santos RG, Greiner T. Possibilities and limitations of breast-feeding among formally employed women. *Rev Saude Publica* 1997;31(2):149-156.

Produced by the NYC Department of Health, Office of Family Health (OFH),  
2 Lafayette St., 18th floor, NYC, NY 10007.  
Telephone: (212) 442-1740 Fax: (212) 442-1789.  
Copies available upon request.

---

Layout and design by Tom Reed.

Acknowledgments: The authors would like to acknowledge the assistance of Rosalinda Millan and Midelyn Montilla.