

# **Report on National Survey into Factors Influencing Breastfeeding**

**(Conference Version)**

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## **“Breastfeeding Promotion Initiative”**

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# Report on National Survey into Factors Influencing Breastfeeding

## Section I. Background

With the continuous socioeconomic progress, child nutrition and health have attracted growing public attentions. Improving nutrition and health during childhood underpins the goal of promoting overall human development, enhancing quality of human capital and ensuring socioeconomic sustainability. An increasing number of research has shown that infancy from birth to two years of age is a critical period for life-long health and nutrition<sup>[1]</sup>. Breastfeeding is the best source of nutrition for newborns and infants during this period, which is one of the most effective measures of keeping healthy development and growth of children<sup>[2]</sup>.

Studies find that breastfeeding cannot be replaced<sup>[3,4]</sup>. The nutrients contained in breast milk can be readily digested and absorbed by babies, and have a significantly better biological availability than those in any other foods, so as to meet the babies' physiological needs at different stages. Rich in anti-infective factors, breast milk can guard babies against gastrointestinal and respiratory diseases, and decrease infant mortality rates effectively<sup>[5]</sup>. Previous studies have shown that improving breastfeeding behavior would annually save about 820,000 life, 87% of whom are less than 6 months of age<sup>[5]</sup>. In addition, breastfeeding has a positive impact on cognitive and non-cognitive development during early infancy. On the one hand, the presence of essential amino acids is of vital importance to brain growth, intelligence and learning ability. On the other hand, when breastfeeding, mothers' voice, embrace and skin-to-skin care can stimulate brain response of babies, promote early intellectual and psychological development, and accelerate their adaptation to the extra-uterine life<sup>[3]</sup>. Breastfeeding is also good for infant health and postpartum recovery. For example, it helps decrease the risk of obesity and diabetes later in life<sup>[3,6]</sup>. Besides, a woman who breastfeeds has a decreased risk of breast and ovarian cancers and some cardiovascular diseases, and will have her uterus healed faster<sup>[6]</sup>.

The benefits of breastfeeding for babies and mothers have become global consensus. The UN "Convention on the Rights of the Child" (《儿童权利公约》) has made it clear that good nutrition is a fundamental right of each and every child, and all state parties have a legal obligation to promote breastfeeding<sup>[7]</sup>. WHO and UNICEF, among other international organizations, have launched standards and policies about breastfeeding, including *International Code of Marketing of Breast-milk Substitutes* (《国际母乳代用品销售守则》), *Innocenti Declaration* (《因诺琴蒂宣言》) and *Baby-friendly Hospital Initiative* (《爱婴医院倡议》), urging all countries to take effective measures to protect, promote and support breastfeeding. In 2002, WHO and UNICEF jointly developed the *Global Strategy for Infant and Young Child Feeding* (《婴幼儿喂养全球战略》), an initiative that aims to improve the nutritional status of infants and young children through optimal feeding<sup>[2]</sup>. It recommends that "infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond<sup>[2]</sup>." Fully Realizing the importance of

breastfeeding, relevant authorities of Chinese government have developed and implemented series of documents, such as the *Law on Maternal and Infant Health Care* (《母婴保健法》), *Measures for Administration of Breast-milk Substitutes* (《母乳代用品管理办法》), *Advertising Law* (《广告法》), *Outline for the Development of Children* (《中国儿童发展纲要》), *National Strategy for Infant and Young Child Feeding* (《中国婴幼儿喂养战略》), and *National Nutrition Plan* (《国民营养计划》), to support and promote breastfeeding over the years.

Now, many national governments and international organizations like WHO have taken the rate of exclusive breastfeeding of children under six months as a major indicator of a country's breastfeeding prevalence. The "Global Nutrition Targets 2025" (全球营养目标 2025) endorsed by the World Health Assembly (WHA) in 2012 outlines six nutrition targets, one of which is to increase the rate of exclusive breastfeeding in the first 6 months up to at least 50% by the year 2025<sup>[8]</sup>. The *Outline for the Development of Children (2011-2020)* (《中国儿童发展纲要(2011-2020)》) and *National Nutrition Plan (2017-2030)* (《国民营养计划(2017-2030年)》), promulgated by Chinese government in 2011 and 2017 respectively, set a clear goal of increasing the rate of exclusive breastfeeding among 0-6m infants to over 50% by 2020<sup>[10,11]</sup>. The *National Nutrition Plan (2017-2030)* expects a further 10% increase by 2030<sup>[11]</sup>.

But things do not bode well in China. Studies have shown a descending rate of exclusive feeding among children under months as the economy and society advances<sup>[12]</sup>. According to the 1998 national food and nutrition survey of 40 monitoring sites nationwide, the rate of exclusive breastfeeding among children under 4 months reached 53.7%<sup>[13]</sup>. However, *China National Health Services Survey 2008* (《中国卫生服务调查研究》) revealed a rate of 27.8% for exclusive breastfeeding of children under six months<sup>[14]</sup>; the rate continuously dropped to 20.8% in 2013 according to *China National Nutrition and Health Survey*, which conducted by Chinese Center for Disease Control and Prevention (CDC, 中国国家疾病预防控制中心). Apparently, there is a long way to go before the goal of 50%, as set forth in the *Outline for the Development of Children (2011-2020)* (《中国儿童发展纲要(2011-2020年)》) and *National Nutrition Plan (2017-2030)* (《国民营养计划(2017-2030年)》), can be realized by 2020<sup>[15]</sup>.

On worldwide average, 43% mothers feed their babies exclusively on breast milk<sup>[1]</sup>. Out of the 101 countries with recent data, 32 have already reached the 2025 World Health Assembly (WHA) goal of an exclusive breastfeeding rate of at least 50%<sup>[1]</sup>. China is below the world's average level now. In addition, as indicated by a study of *The Lancet*, the exclusive breastfeeding rates for all low-income and middle-income countries had increased from 25% in 1993 to 37% in 2013<sup>[17]</sup>. China even lags behind the average rate of low- and middle-income countries.

In fact, China cannot compete with most Asian countries in exclusive breastfeeding. South Asia has been recorded the fastest progress worldwide in the rate of exclusive breastfeeding with 17 percentage points, increasing from 47% in 2000 to 64% in 2015<sup>[1]</sup>. In particular, the rate of exclusive breastfeeding raised, respectively, to 64.5% in 2013 in India (an increase of 18.5% compared to the rate of 2005)<sup>[16]</sup>, and from 37.4% in 2006 to 55.3% in 2014 in Bangladesh. As for the East Asia and Pacific region,

Cambodia, Myanmar, Mongolia, Indonesia, Laos and some other countries have also outrun China<sup>[16]</sup>. To be specific, Cambodia and Myanmar have quintupled their rates of exclusive breastfeeding since 2000, from 11.7% to 65.2% and from 11.2% to 51%, respectively. The exclusive breastfeeding rate of Laos went up from 22.6% in 2000 to 40.4% in 2011, while in Thailand the rate increased from 5.4% in 2005 to 23% in 2015.

Given the status quo in China, the present study aims to understand, via nationwide survey, the breastfeeding prevalence among infants under one year of age in China, and potential determinants that may influence breastfeeding behaviors. The objective was to explore the legal and policy framework that can further promote breastfeeding in China and enhance maternal and infant health, so as to move towards the goal set forth in the *Outline for the Development of Children (2011-2020)* (《中国儿童发展纲要(2011-2020年)》) and *National Nutrition Plan (2017-2030)*(《国民营养计划(2017-2030)》) .

## Section II. Subjects and Methods

### I. Purpose and General Framework

This study conducted the first nationwide cross-sectional survey on factors influencing mothers' breastfeeding decisions aiming at provide scientific basis for optimizing legal and policy framework to promote breastfeeding practices in China.

This study selected 12 county-level sample sites across the country. From August 2017 to January 2018, sampled mothers of infants under one year of age accepted face-to-face investigation based on an identical e-questionnaire disclosed on the information collection platform through the use of mobile phones, tablet PCs and other handheld terminals.

### II. Sampling

To improve the representativeness of the sample, this study adopted a multistage stratified random cluster sampling process. All administrative units at the county level (including counties, county-level cities and districts) across 31 provinces (autonomous regions, municipalities directly under the central government) were classified as three strata, i.e. large cities<sup>1</sup>, medium and small cities<sup>2</sup>, and rural areas<sup>3</sup>. The selection of survey sites also considers geographical distribution to represent Northeast China, North China, Northwest China, East China, Central China, South China and Southwest China. In addition, based on demographic attributes, subjects are classified into

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<sup>1</sup> Large cities refer to municipalities directly under the central government, cities specifically designated in the State plan, and central areas of provincial capital cities with over 1 million urban population. There are 135 districts in this stratum. Samples were collected from permanent residents and migrant population respectively.

<sup>2</sup> Medium and small cities refer to all districts except the central part of large cities, as well as county-level cities, including those in 592 counties that are key targets in the state poverty alleviation development program. There are 1,086 districts and county-level cities in this stratum. Samples were collected from permanent residents and migrant population respectively.

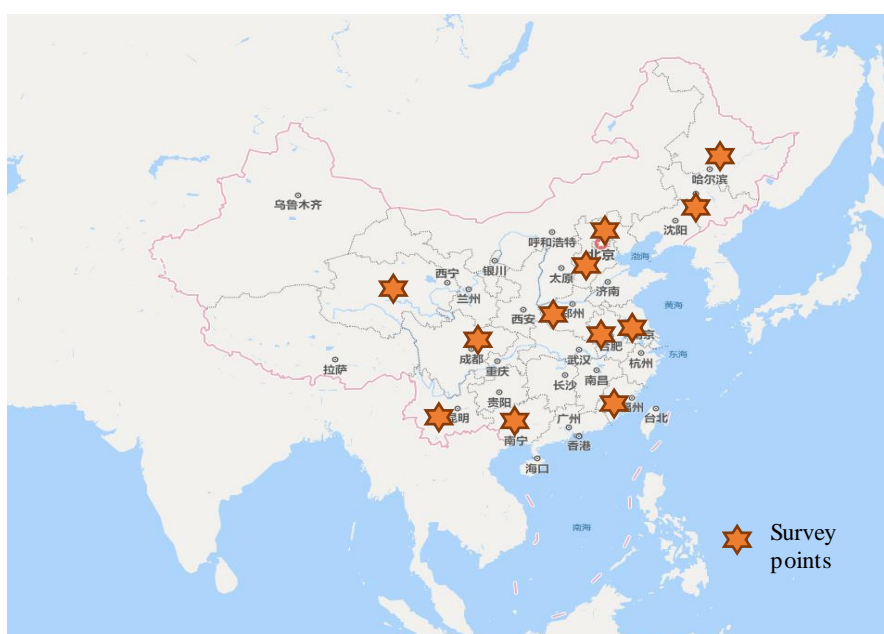
<sup>3</sup> Rural areas include impoverished rural areas and average rural areas. Impoverished rural areas refer to counties that are key targets in the state poverty alleviation development program. There are 559 impoverished counties in this stratum, which are the counties identified in the *Outline for Development-Oriented Poverty Alleviation for China's Rural Areas (2011-2020)* (《中国农村扶贫开发纲要(2011-2020年)》) with an excluding of county-level cities and districts. Samples were collected from permanent residents only. Average rural areas refer to all counties other than impoverished counties. There are 1,074 average rural counties in this stratum.

permanent residents and migrant population as well. Since the most of migrant population lives in large, medium and small cities, this study extracted equivalent samples of migrant infants only from cities to represent the breastfeeding practices of the migrant population.

Upon stratification of nationwide administrative units, the random sampling by three stages was conducted as follows :

At the first stage, a first-tier sampling frame for county-level administrative units was established based on national standard address codes. Then, the number of sample sites for each stratum was calculated based on the Probability Proportional to Size (PPS) method. Based on the size of population under one year of age in districts and counties with an access to the communicable disease reporting system in 2014, altogether 12 counties (districts) were selected as survey sites, including 4 of large cities, 4 of medium and small cities, 4 of rural areas. See Fig. 2.1 for geographical distribution of these survey sites.

**Fig. 2.1: Geographical distribution of survey sites**



At the second stage, a second-tier sampling frame was established based on data from National Bureau of Statistics to include urban neighborhoods (and residents' committees) and rural towns/townships (and village committees). Then, four towns/townships or neighborhoods were randomly chosen from each of the selected sample counties (districts) via PPS process. Where a small or medium city has less than four neighborhoods, the vacancies were filled by towns adjacent to the city proper. Likewise, in rural areas, the township-level vacancies were filled by adjacent towns.

At the third stage, 210 infants under one year of age were randomly selected from each of the sample towns/townships (urban neighborhoods), based on the list of children with access to the planned immunization clinics service. Given the fact that 98.4% of the infants in migrant population have been vaccinated in 2015, the survey collected migrant samples in the chosen neighborhoods from eight sample cities based on the list of immunization clinics service.,.

Based on the size of population, 840 children under one year of age were chosen from each of the survey sites for survey. Altogether 10,223 valid samples were collected in the end.

### **III. Questionnaire**

The questionnaire includes the basic information about babies and their families, breastfeeding practices, maternal and infant health, supports from family and community, supports from medical and health institutions, supports from workplace and employment, social environment and culture, and household economic conditions, etc.

The basic information included the age of infants and the age, ethnic group, occupation and educational background of their parents. Breastfeeding practices included the basic conditions of the infants at birth, feeding patterns, and mothers' cognition of breastfeeding, etc. Maternal and infant health includes mothers' health conditions during pregnancy, and baby's health conditions in the past two weeks. In addition, the questionnaire looked into the supports from medical and health institutions, supports from family and community, marketing of breast-milk substitutes, maternity leave policy, supports from workplace and employment, and public facilities, etc.

### **Section III. General Information of Samples**

Out of all valid samples involved, there are 3,614 samples representing large cities, 3,381 representing medium and small cities, and 3,228 representing rural areas to ensure a fairly even distribution across three strata. Table 3.1 demonstrates the general information of the respondents. To be specific, samples of the migrant population totaled up to 1,649 (or 45.6%) in large cities, and 877 (or 25.9%) in medium and small cities. In addition, 1,619 samples were collected from impoverished rural areas, accounting for 50.2% of all rural samples.

Out of the 10,223 infants involved, 5,186 (or 50.7%) were boys and 5,037 (or 49.3%) were girls. The samples showed an even distribution across 0-11 month of age.

The age distribution of mothers followed an inverted U-curve. There were 4,172 (or 40.8%) mothers aged from 26 to 30, and 2,349 (or 23.0%) from 31 to 35. Besides, 1,417 (or 13.9%) mothers were from minority groups. In terms of educational background, the regional gap was quite obvious. 66.8% mothers from large cities graduated from colleges or higher-level learning institutions. The proportion stood at 71.1% and 61.6% in non-migrant and migrant populations respectively. Mothers who have obtained academic credentials of junior high schools accounted for 35.6% and 59.5% of all samples from small/medium cities and rural areas, respectively, outrunning any of the other educational background groups. Mothers who have graduated from senior high schools or above took up more than 50% of the samples from small/medium cities, and only 29.1% of all rural samples. Regional differences were also noticed in employment among mothers. Over 50% of the mothers in large cities engaged in formal employment, higher than 24.5% and 4.4% in small/medium cities and rural areas, respectively. In rural areas, 55.2% of the mothers engaged in informal employment. The proportion of informal employment recorded only 16.0% and 33.5% in large cities and small/medium cities.



The age distribution for fathers also followed an inverted U-curve. The average age of fathers was slightly higher than that of mothers. Besides, 1,284 (or 12.6%) fathers were of minority groups, slightly fewer than mothers. Regional differences in educational background were also noticeable among fathers. To be specific, 67.8% of the fathers in large cities graduated from colleges or higher-level learning institutions, where non-migrant fathers led by 10 percentage points ahead of migrant ones. In addition, fathers who had obtained academic credentials of junior high schools accounted for 37.8% and 60.1% of all samples collected from small/medium cities and rural areas respectively, outrunning any of the other educational background groups - both figures were slightly higher than those of the mothers.

**Table 3.1: General information of the samples (%)**

Characteristics		Strata									
		Large Cities			Small/Medium Cities			Rural Areas			
		Non-migrant (n=1965)	Migrant (n=1649)	Sum (n=3614)	Non-migrant (n=2504)	Migrant (n=877)	Sum (n=3381)	Average (n=1609)	Impoverished (n=1619)	Sum (n=3228)	Total (n=10223)
<b>Infants</b>	<b>Gender</b>										
	Boy	50.9	51.2	51.1	50.5	51.5	50.8	49.5	51.1	50.3	50.7
	Girl	49.1	48.8	48.9	49.5	48.5	49.2	50.5	48.9	49.7	49.3
	<b>Months of age</b>										
	0-1m	18.7	18.4	18.6	18.0	18.0	18.0	16.7	17.5	17.1	17.9
	2-3m	16.7	15.7	16.3	16.2	15.8	16.1	16.1	16.1	15.2	16.1
	4-5m	16.5	16.4	16.4	17.1	14.3	16.4	16.8	16.4	15.7	16.5
	6-7m	16.8	16.5	16.7	16.9	17.3	17.0	17.6	16.9	16.3	17.0
8-9m	17.1	18.1	17.5	17.1	16.1	16.8	17.2	16.8	16.1	17.1	
10-11m	14.2	15.0	14.5	14.7	18.5	15.7	15.7	16.2	15.1	15.4	
<b>Mothers</b>	<b>Age</b>										
	<=20	0.7	1.5	1.1	4.5	8.7	5.6	2.7	5.5	4.1	3.5
	21-25	7.7	15.2	11.1	22.2	25.8	23.2	22.7	30.1	26.5	19.9
	26-30	36.0	42.4	39.0	40.5	41.7	40.8	50.8	35.0	42.8	40.8
	31-35	32.8	27.7	30.5	20.7	15.8	19.4	17.5	19.1	18.3	23.0
	>35	22.4	12.7	18.0	11.9	7.8	10.8	6.3	9.8	8.0	12.5
	<b>Ethnic Groups</b>										
	Han	84.0	84.4	84.2	83.2	70.1	79.8	98.9	88.8	93.8	85.8
	Minority Groups	15.8	15.2	15.5	16.7	29.8	20.1	0.9	10.1	5.5	13.9
	<b>Educational Background</b>										
Elementary School or Below	1.5	2.4	1.9	9.4	13.6	10.5	3.4	18.4	10.9	7.6	
Junior High School	12.3	17.6	14.7	34.1	39.9	35.6	56.9	62.1	59.5	35.8	
Senior High School	14.7	18.3	16.3	23.3	18.7	22.1	23.7	10.2	16.9	18.4	

	College and Above	71.1	61.6	66.8	33.2	27.8	31.8	15.9	8.6	12.2	38.0
	<b>Employment</b>										
	Formal	58.5	45.8	52.7	26.5	18.9	24.5	5.3	3.6	4.4	28.2
	Informal	14.3	18.0	16.0	30.9	41.2	33.5	41.6	68.8	55.2	34.2
	Out of Job	27.1	35.9	31.1	42.4	39.6	41.6	53.1	27.0	40.0	37.4
	<b>Age</b>										
	<=20	0.1	0.7	0.3	1.4	3.3	1.9	0.8	0.7	0.7	1.0
	21-25	5.5	9.1	7.1	12.3	16.4	13.4	16.7	20.6	18.7	12.8
	26-30	27.8	37.1	32.1	38.0	41.7	39.0	53.4	37.4	45.4	38.6
	31-35	32.0	30.0	31.0	26.0	23.7	25.4	19.4	22.8	21.1	26.0
	>35	34.7	23.2	29.4	22.3	14.8	20.4	9.7	18.5	14.1	21.6
	<b>Ethnic Groups</b>										
	Han	86.0	84.4	85.3	84.9	71.6	81.4	99.0	91.4	95.2	87.1
	Minority Groups	13.6	15.2	14.4	15.0	28.1	18.4	0.9	8.0	4.5	12.6
	<b>Educational Background</b>										
	Elementary School or Below	1.5	2.1	1.8	8.8	13.3	10.0	4.7	15.7	10.2	7.1
	Junior High School	13.1	16.3	14.5	36.6	41.2	37.8	58.6	61.6	60.1	36.6
	Senior High School	12.8	19.0	15.6	23.1	21.0	22.5	24.8	14.2	19.5	19.1
	College and Above	72.4	62.3	67.8	31.3	24.3	29.5	11.9	8.2	10.0	36.9
<b>Fathers</b>											

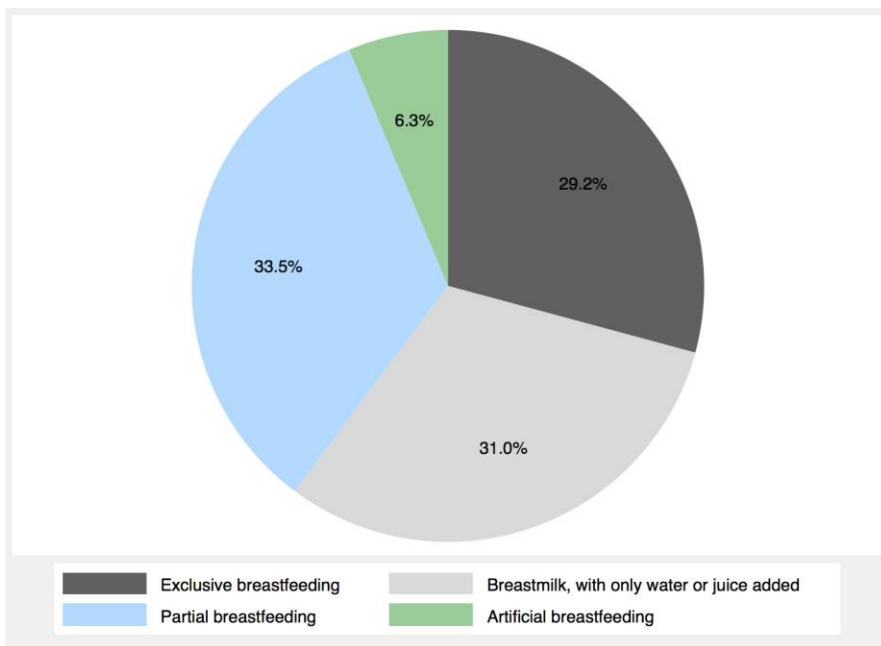
## Section IV. Breastfeeding for Infants under One Year of Age

Developed by WHO, the *Global Strategy for Infant and Young Child Feeding* (《婴幼儿喂养全球战略》) recommends that “infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants up to two years of age or beyond should receive nutritionally adequate and safe complementary food while breastfeeding continues. [2].” This study targeted at infants under one year of age, examining the prevalence of exclusive breastfeeding of infants 0-5 months of age, continued breastfeeding among 6 to 11m babies, and the provision of early initiation of breastfeeding and early skin-to-skin contact (SSC).

### I. Breastfeeding of infants within the first six months

In the present study, the infant feeding practices (up to six months) fell into two categories, i.e. exclusive breastfeeding and nonexclusive breastfeeding. Exclusive breastfeeding, as WHO has defined, means that the infants only receive breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines<sup>[18]</sup>. Nonexclusive breastfeeding refers to 1) predominant breastfeeding, which involves mostly breast milk, with only water, juice and other fluids added; 2) partial breastfeeding, which means giving a baby breastfeeding together with some artificial feeds like formula, dairy products, solid/semi-solid foods; and 3) artificial feeding, where a baby is fed on a diet devoid of any breast milk.

**Fig. 4.1: Infant feeding within the first six months**



Of all infants under six months in this study, 29.2% were exclusively breastfed; 31.0% were fed mostly on breast milk, with only water, juice and some other fluids added; 33.5% were given breast milk, together with formula, dairy products and some other foods; and 6.3% received artificial feeding (see Fig. 4.1).

## **II. Addiction of other foods or fluids to the diet of nonexclusively breastfed infants up to 6 months of age**

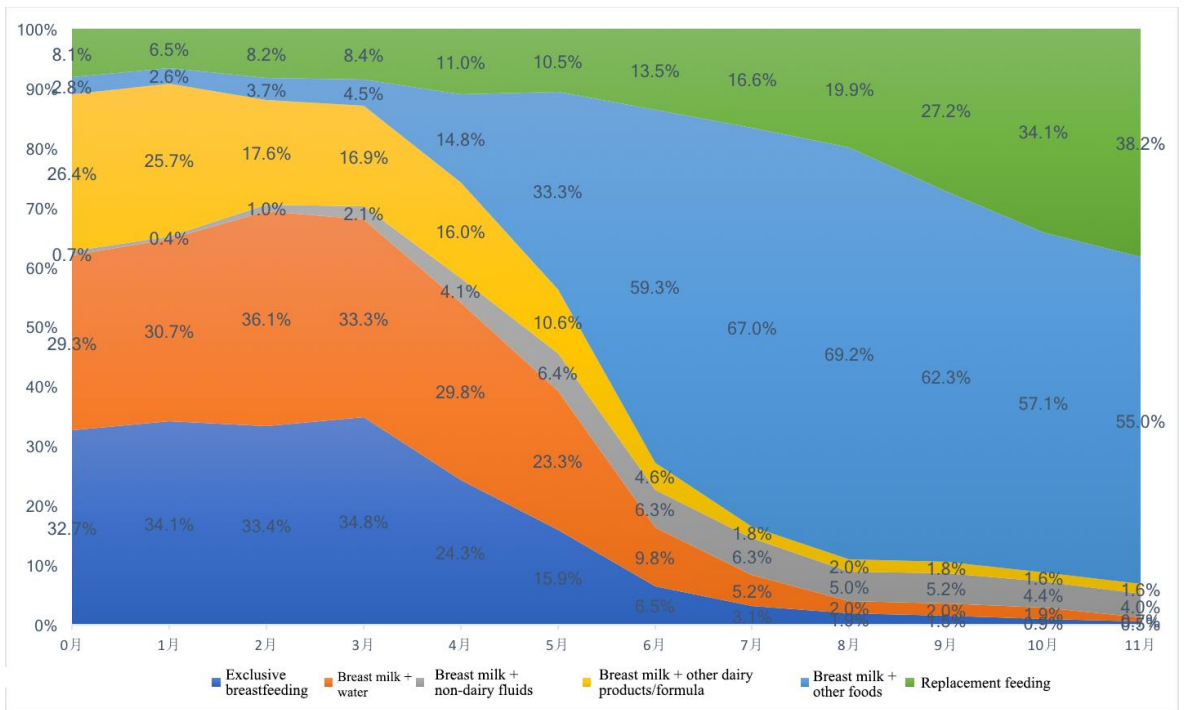
The statistics of this study have shown variations, by month of age, in the addition of water/juice/other fluids and formula/dairy products/other foods to the diet of nonexclusively breastfed infants under 6 months of age (see Fig. 4.2).

First, the percentage of babies who were fed mostly on breast milk, with only water, juice and some other fluids added, took up a large share of nonexclusively breastfed infants across all age groups up to six months. To be specific, they accounted for 29.3% of 0m newborns, over 30% of each of the 1-3m groups, and 29.8% of 4m infants.

Second, the percentage of babies who were given breast milk, together with formula or other dairy products, also represented a large part across all age groups up to six months. To be specific, they accounted for 26.4% and 25.7% of 0m and 1m newborns, respectively. The proportion dropped by 10% among 2-4m infants as compared with the first two age groups, and was further reduced to 10.6% when 5m babies are concerned.

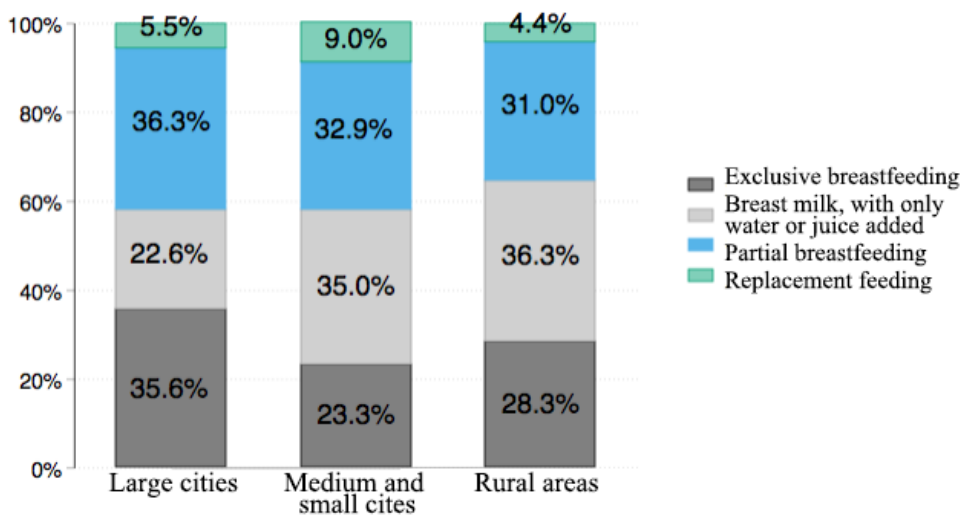
Third, significantly more 4-5m age infants were given foods other than formula and other dairy products than 0-3m newborns group. To be specific, fewer than 5% of 0-3m newborns were given other foods. But the proportion rose to 14.8% among 4m babies and further to 33.3% among 5m ones.

**Fig. 4.2: Infant feeding across all age groups up to 12 months**



**III. Regional variations in infant feeding within the first six months**

**Fig. 4.3: Regional variations in infant feeding within the first six months**



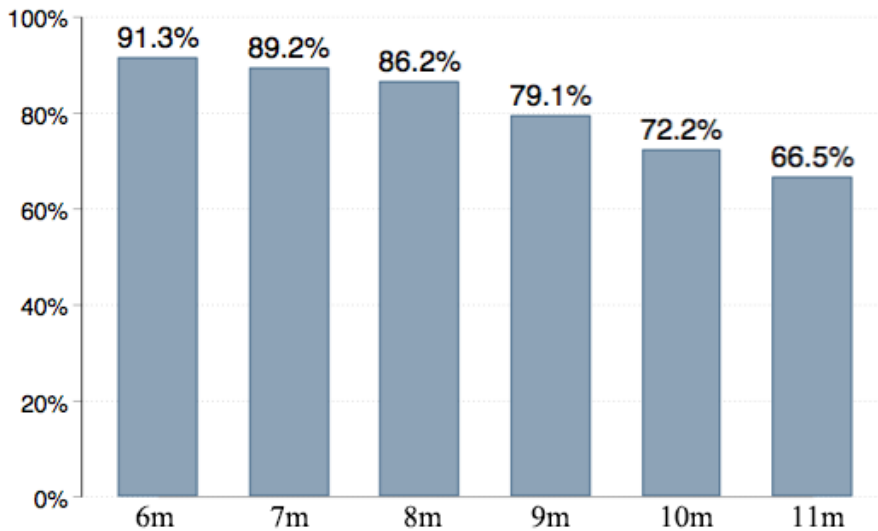
This study has shown considerable variations in infant feeding patterns within the first six months of life by stratum, i.e. large cities, medium/small cities and rural areas ( $P<0.001$ ) (see Fig. 4.3). Of the three strata covered by this study, large cities exhibited the highest rate of exclusive feeding of 35.6%, followed by 28.3% in rural areas and 23.3% in medium/small cities. As far as population mobility is concerned, 37.6% of non-migrants and 33.1% of migrants in large cities chose to breastfeed exclusively, forming a 4.5% gap. In small and medium cities, the rate of exclusive breastfeeding stood at 24.3% among non-migrants, 4.2% higher than that among migrants.

Likewise, there have been noticeable regional variations in other kinds of feedings within the first six months of life ( $P<0.001$ ). To be specific, 36.3% of infants under six months were fed on breast milk, with only water or juice added, in rural areas – the highest ratio among the three areas. It was followed by 35.0% in small and medium cities, and 22.6% in large cities. The proportion of infants under six months who were partially breastfed and given formula, dairy products and other foods reached 36.3% in large cities, higher than 32.9% in small and medium cities, and 31.0% in rural areas.

#### **IV. Breastfeeding among 6-11m infants**

The WHO recommends that babies should receive nutritionally adequate and safe complementary foods from 6 months of age onwards, while breastfeeding continues for up to two years of age or beyond<sup>[2]</sup>. The present study looked into continued breastfeeding among 6-11m infants to find out whether they continue to be breastfed from six months of age onwards. The statistics have shown a downward trend in the rate of breastfeeding across all age groups from 6 to 11 months. To be specific, 91.3% of 6m infants were given breast milk. The rate declined month by month to 66.5% among 11m infants (see Fig. 4.4).

**Fig. 4.4: The rate of breastfeeding among 6-11m infants**



## **V. The rate of immediate SSC (skin-to-skin contact) and early initiation of breastfeeding after childbirth**

Facilitating early initiation of breastfeeding is one of the “Ten Steps to Successful Breastfeeding” (《促进母乳喂养成功十条标准》) advocated by WHO<sup>[19]</sup>. It is recommended that we should facilitate and encourage immediate and uninterrupted skin-to-skin contact (SSC), and support mothers to start breastfeeding as soon as possible within the first hour after delivery. It is crucial to support mothers in initiating and establishing breastfeeding with their babies in the first hours and days of life<sup>[19]</sup>. Studies have shown that mothers who have immediate SSC after delivery could see a better chance of early initiation of breastfeeding (EIB) and a higher possibility of exclusive breastfeeding (EBF). They will also breastfeed their infants longer<sup>[20]</sup>.

Of the newborns in this study, 11.3% latched on to the breast in the first hour of birth. 73.2% succeeded in 24 hours, while 26.8% failed to establish a good latch within 24 hours.

## **Section V. Analysis on Factors that Influence Breastfeeding**

Many factors influence breastfeeding prevalence. According to studies published at *The Lancet*, the associated factors can be categorized into three levels, i.e.

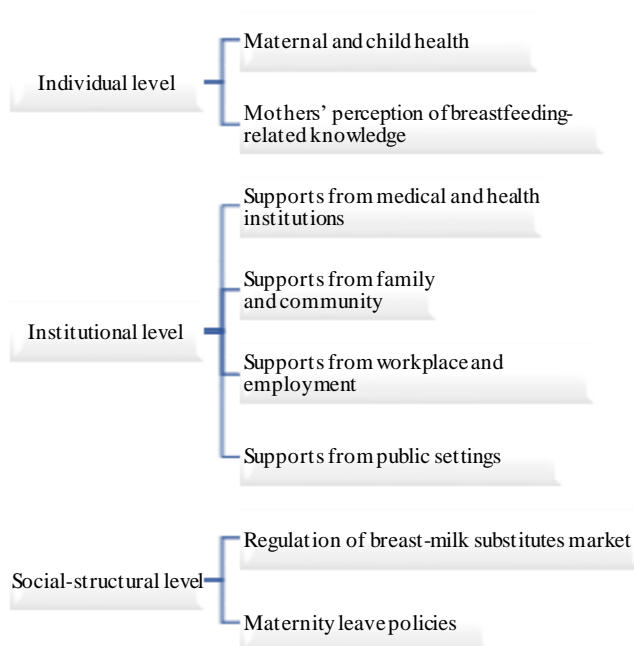


individual, institutional and social-structural<sup>[17]</sup>. Individual-level factors include mother's age, weight, educational background, confidence and awareness, and the attributes of her baby such as sex, health, and temperament. At the institutional level, supports from medical and health institutions, family and community, and workplace and employment influence feeding decisions. Social and cultural attitudes, legal and policy directives and market environment shape the structural context for breastfeeding. These factors can affect woman's breastfeeding and whether they can breastfeed in an optimal way recommended by WHO.

Under the framework proposed by previous studies, this study explored individual, institutional and social-structural factors that could influence the exclusive-breastfeeding practices within six months after delivery (see Fig. 5.1). As per the definitions in Section IV, infants under six months of age were divided into two groups, i.e. exclusively breastfed and non-exclusively breastfed groups. Then, univariate analyses were done with SPSS. Furthermore, this study use exclusive breastfeeding under six months and early initiation of breastfeeding as dependent variables to conduct multivariate logistic regression analyses with Stata14.0.

According to the survey results, maternal and child health as well as mothers' perception of breastfeeding-related knowledge have had significant influence for early initiation of breastfeeding, and for the prevalence of exclusive breastfeeding within the first six months. At the institutional level, supports from medical and health institutions, family and community, and workplace and employment have influenced exclusive-breastfeeding decisions. Besides, maternity leave policies, as well as breast-milk substitutes marketing and promotion have had significant effect on exclusive-breastfeeding practices.

**Fig. 5.1: Multidimensional factors that could influence breastfeeding**



## **I. Individual level factors**

### **1. Maternal and infant health**

Of all babies involved in the study, 4.7% had low birth-weights (LBW) and 39.3% were cesarean born. 8.7% of mothers had gestational diabetes mellitus (GDM) or hypertensive disorder. 53.7% of babies developed neonatal hypoglycemia or jaundice, received neonatal in-patient treatment, or had diarrhea or respiratory diseases in the recent two weeks.

Mode of delivery, as well as maternal and infant health, might have an effect on breastfeeding (see Table 5.1). In this study, the rate of EIB of LBW babies was 5.5 percentage points lower than that of non-LBW babies. It was also found that babies born via caesarean section lagged 5.2 and 6.0 percentage points behind naturally born ones in the rate of EIB and the rate of EBF within the first six months of life, respectively. Furthermore, for babies who developed neonatal hypoglycemia or jaundice, received neonatal in-patient treatment, or had diarrhea or respiratory diseases in the past two weeks, the rate of EBF within the first six months was 7.9 percentage points lower than that of the rest. These gaps are of statistical significance.

**Table 5.1: Impact of maternal and infant health on breastfeeding**

		Early initiation of breastfeeding		Exclusive breastfeeding within 6m	
		Rate	P value	Rate	P value
LBW babies	Ye	6.1%	<0.001		
	No	11.6%			
C-section	Ye	8.2%	<0.001	25.6%	<0.001
	No	13.4%		31.6%	
Prenatal	Ye	9.7%	0.092		
	No	11.5%			
Neonatal	Ye			25.3%	<0.001
	No			33.2%	

Besides the geographical distributions, personal attributes of infants and mothers, and other factors, the study sought to explain how maternal and infant health could influence EIB (see Appendix Table 1) and EBF up to 6 months of life (see Appendix Table 2) through a logistic regression model. The findings indicated a far lower possibility of EIB among LBW babies than among non-LBW ones (OR 0.57, 95%CI: 0.39~0.84); among babies whose mothers developed gestational diabetes mellitus (GDM) or hypertensive disorder than among those whose mothers did not have such diseases during pregnancy (OR 0.66, 95%CI: 0.52~0.85); and among C-section born babies than among naturally born ones (OR 0.60, 95%CI: 0.52~0.69). The findings have also shown that C-section born babies are much less likely to be fed exclusively on breast milk up to 6 months of age than naturally born ones (OR 0.81, 95%CI: 0.71~0.93). Likewise, babies diagnosed with diseases after birth are much less likely to be exclusively breastfed within the first 6 months than healthy ones (OR 0.77, 95%CI: 0.67~0.87).

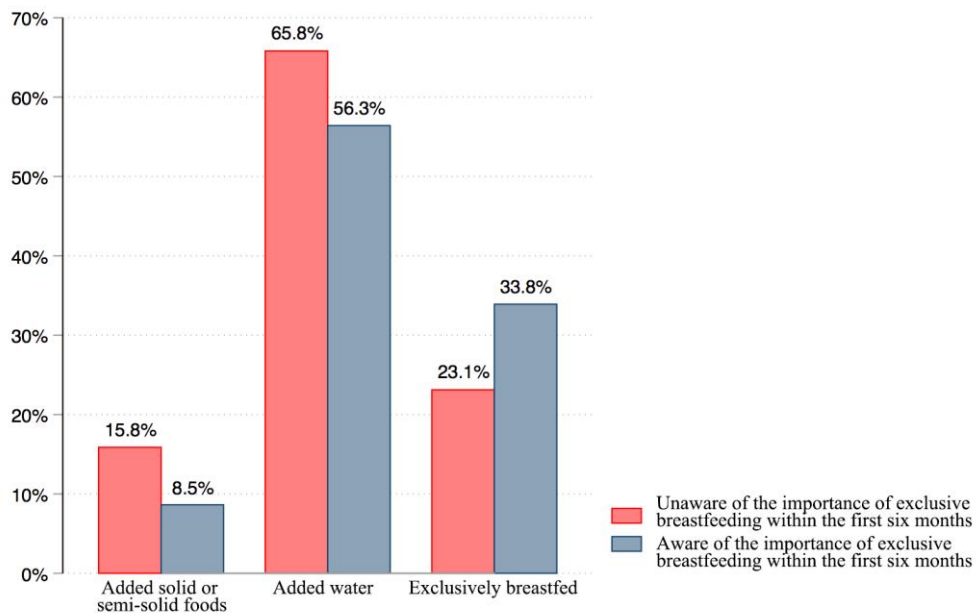
## 2. Perception of breastfeeding

As pointed out by the *Global Strategy for Infant and Young Child Feeding*, mothers, fathers and other caregivers firstly should have access to objective, consistent and complete information about appropriate feeding practices, free from commercial influence. Mothers should also have access to skilled support to help them initiate and sustain optimal feeding practices<sup>[2]</sup>. Through multivariate and univariate regression analyses, it was found that the following five perceptions from mothers have important implications for exclusive breastfeeding practices.

### (a) Perception of exclusive breastfeeding

To help mothers establish a proper perception of exclusive breastfeeding is the prerequisite and foundation for successful breastfeeding practices, and plays a decisive role in the rate of exclusive breastfeeding. In this survey, 65.8% of the mothers who had failed to establish the right perception feed their babies water, 9.5 percentage points higher than that of aware mothers. Besides, 15.8% of unaware mothers added solid, semi-solid or pasty foods to their babies' meals within the first six months, 7.3 percentage points higher than that of aware mothers. As a result, unaware mothers lagged 10.7 percentage points behind aware mothers in the rate of exclusive breastfeeding (see Fig. 5.2). After controlling for the geographical distributions, personal attributes of infants and mothers, and other factors, this study found that the aware mothers are much more likely to feed their babies exclusively on breast milk than unaware mothers (OR 1.55, 95%CI: 1.36~1.78).

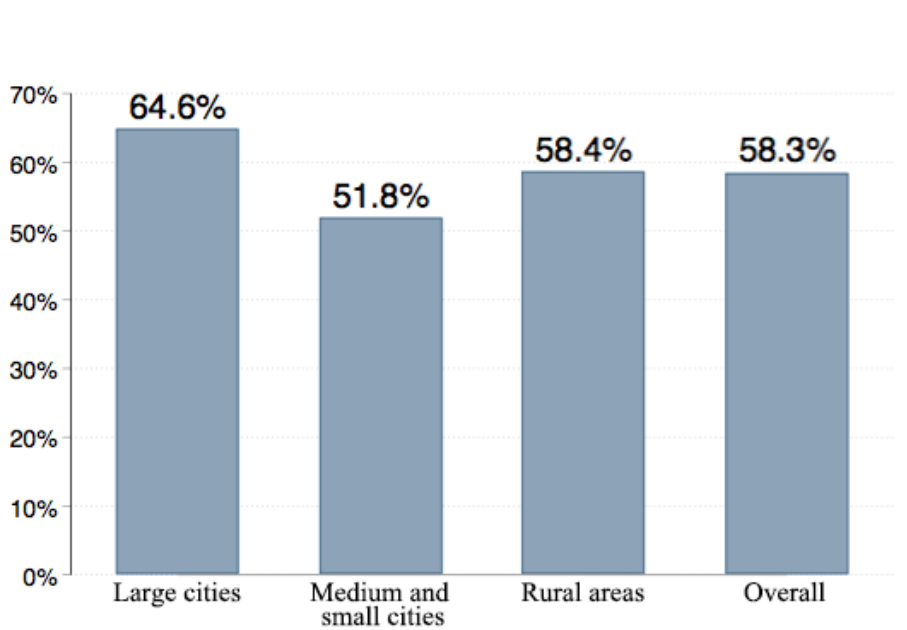
**Fig. 5.2: The influence of a proper perception of exclusive breastfeeding on successful breastfeeding practices**



As for the perception of exclusive breastfeeding, 58.4% of the mothers were aware of the importance of feeding their babies under six months of age exclusively on breast milk. Regional differences could also be noticed in this regard. Aware mothers took up 64.6% of all respondents in large cities, 58.4% in rural areas, and

51.8% - the smallest proportion among three strata - in small and medium cities (see Fig. 5.3).

**Fig. 5.3: Perception of exclusive breastfeeding**



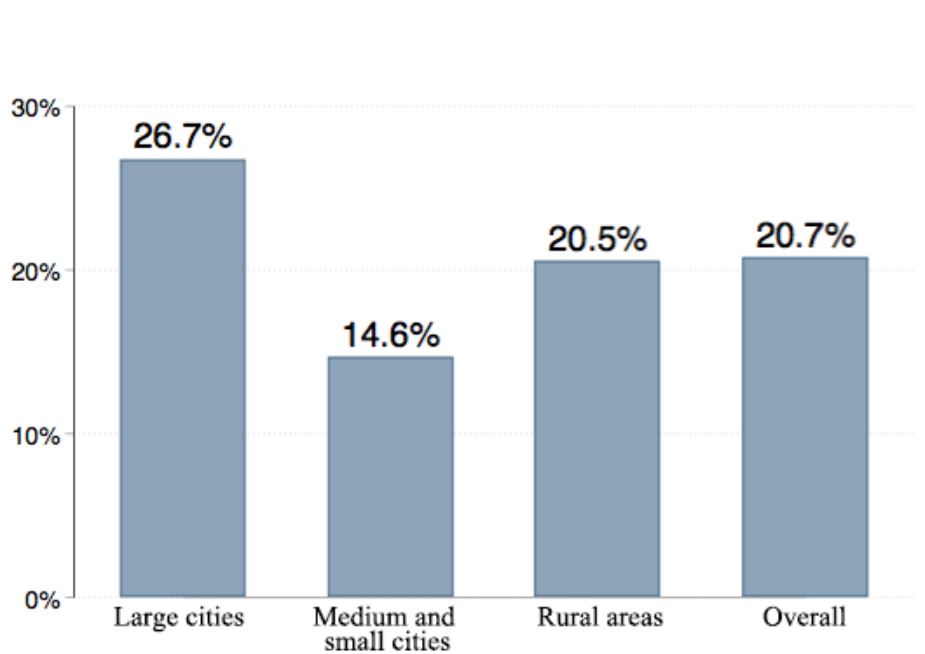
**(b) Perception of immediate SSC after birth and early initiation of breastfeeding**

Immediate and uninterrupted SSC after birth and successful latch within the first hour after delivery will make colostrum come in faster and help the mothers establish exclusive breastfeeding with their babies. In the study, mothers who had established this perception showed a far higher rate of immediate SSC and early breastfeeding than those who hadn't. In fact, the former is more likely to have their babies latched on to the breast within one hour after delivery and insist on exclusive breastfeeding within the first six months. To be specific, mothers who had established the right perception led by 43.7 percentage points ahead of those who hadn't in the rate of successful latch within one hour after birth, and by 7.5 percentage points ahead in the rate of exclusive breastfeeding (see Table 5.2).

**Table 5.2: The perception of immediate SSC and early breastfeeding and its impact on breastfeeding**

	Were mothers aware of the importance of a good latch within one hour after birth?		
	Yes	No	
The rate of successful latch within one hour after birth	46.0%	2.3%	P<0,001
The rate of exclusive breastfeeding	35.1%	27.6%	P<0,001

**Fig. 5.4: Perception of immediate SSC after birth and early initiation of breastfeeding**



It is clear that only a small portion of mothers have established the perception of immediate SSC and early breastfeeding. Only 20.7% of mothers were aware of the importance of getting their babies latched on the breast within the first hour of life. Regional differences could also be noticed. To be specific, aware mothers took up 26.7% of all respondents in large cities and 20.5% in rural areas. Small and medium cities ranked last with a rate of only 14.6% (see Fig. 5.4).

**(c) Perception of baby sucking as the best way to stimulate milk production**

Establishing a right perception of baby sucking as the best way to stimulate milk production has an impact on early colostrum lactation and successful initiation of exclusive breastfeeding. In this study, mothers who had established this perception outstripped unaware mothers by 11.3 percentage points in the rate of continued latching before milk came in, and were 11 percentage points higher in the rate of exclusive breastfeeding in the first six months than those who had given up on baby sucking before milk came in. These gaps are of statistical significance (Tables 5.3 and 5.4). But as indicated by the regression analyses, merely establishing the right perception had not a direct and significant impact on exclusive breastfeeding prevalence (OR 1.03, 95%CI: 0.85~1.24). Mothers who had insisted on baby sucking before milk came in showed a significantly higher probability of exclusive breastfeeding under six months than those who hadn't (OR 1.44, 95%CI: 1.12~1.85).

**Table 5.3: The perception of the best way to stimulate milk production and its impact on continued baby sucking practices**

	Were mothers aware that baby sucking is the best way to stimulate milk production?		
	Yes	No	
Kept the babies latched on to the breast before milk came in	92.7%	81.4%	P<0.001

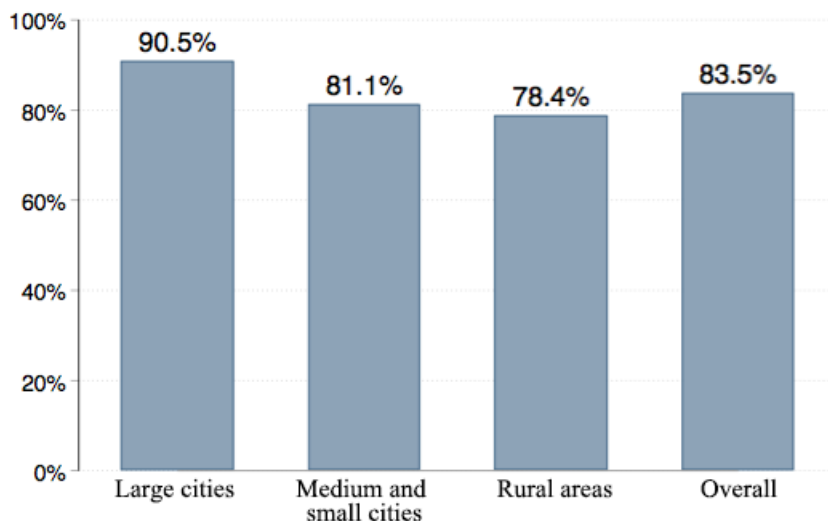
**Table 5.4: Continued baby sucking before milk came in and its impact on exclusive breastfeeding practice**

	Did mothers keep the babies latched on to the breast before milk came in?		
	Yes	No	
Babies got their first milk within 24h	15.1%	6.0%	P<0.001
The rate of exclusive breastfeeding	30.3%	19.3%	P<0.001

83.6% of the mothers understood that baby sucking is the best way to stimulate milk production, according to the survey results. In particular, the proportion of

aware mothers reached 90% in large cities, higher than that of small/medium cities and rural areas (see Fig. 5.5).

**Fig. 5.5: Perception of the best way to stimulate milk production**



**(d) Perception of breastfeeding on demand**

The WHO advocates the practice of feeding on demand, and considers it as a major step towards successful breastfeeding<sup>[19]</sup>. According to the survey, the perception of feeding on demand can influence exclusive breastfeeding practices in a noticeable way. As shown in Table 5.5, mothers aware of the importance of feeding on demand led by 7.6 percentage points ahead of unaware ones in the rate of exclusive breastfeeding. Also, aware mothers are much more likely to feed their babies exclusively on breast milk within the first six months than unaware ones, as revealed by the regression findings (OR 1.31, 95%CI: 1.11~1.55).

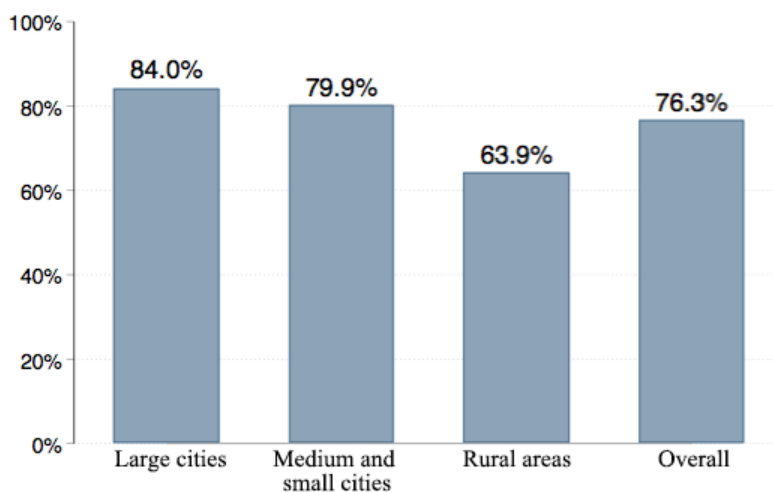
**Table 5.5: Perception of feeding on demand and its impact on exclusive breastfeeding**

	Were the mothers aware of the importance of feeding on demand?		
	Yes	No	
The rate of exclusive breastfeeding	31.0%	23.4%	P<0.001



76.3% of mothers have established the perception of feeding on demand. But there were regional differences. To be specific, aware mothers took up 84.0% of all respondents in large cities and 79.9% in small and medium cities. Rural areas ranked last, with only 63.9% of mothers aware of the importance of feeding on demand (see Fig. 5.6).

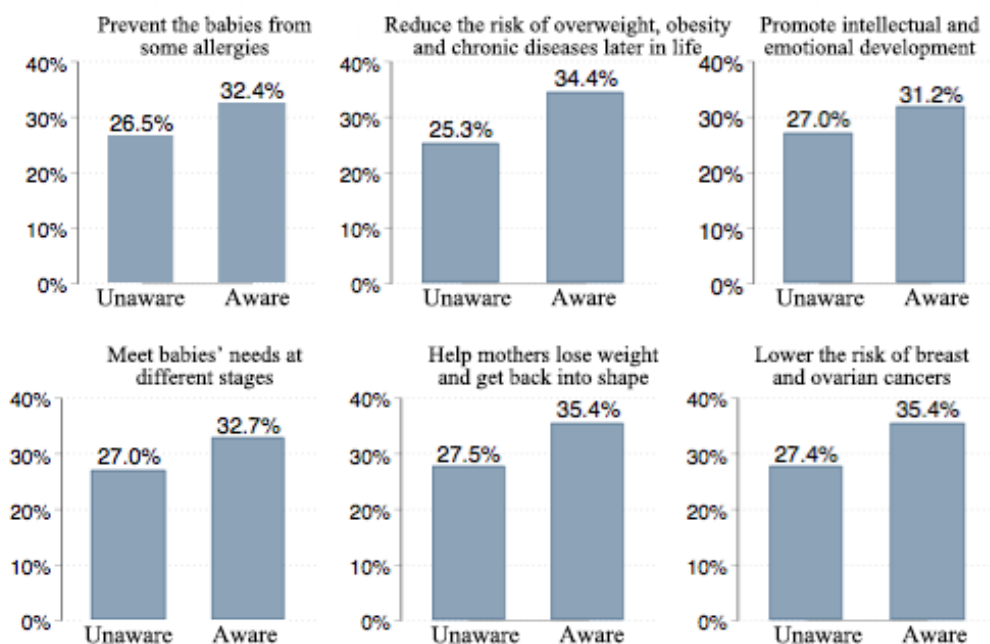
**Fig. 5.6: Perception of feeding on demand**



**(e) Perception of the benefits of breastfeeding**

Understanding how breastfeeding benefits mothers and infants will help increase the prevalence of exclusive breastfeeding, according to the survey (see Fig. 5.7). For babies, breastfeeding can meet their needs at different stages in a way that other substitutes cannot compete with; can prevent some allergies; can reduce the risk of overweight, obesity and chronic diseases later in life; and can promote their intellectual and emotional development. These four perceptions pushed the rate of exclusive breastfeeding up by 4.6 percentage points, 8 percentage points, 7.9 percentage points and 5.7 percentage points, respectively. For mothers, breastfeeding can help them lose weight and get back into shape; and can reduce the risk of breast and ovarian cancers. These two perceptions led to an increase in the rate of exclusive breastfeeding by 9.1 and 5.9 percentage points, respectively. These gaps are of statistical significance. Regression analyses also suggested a positive correlation between the awareness of breastfeeding benefits and the probability of exclusive breastfeeding under six months (OR 1.06, 95%CI: 1.02~1.10).

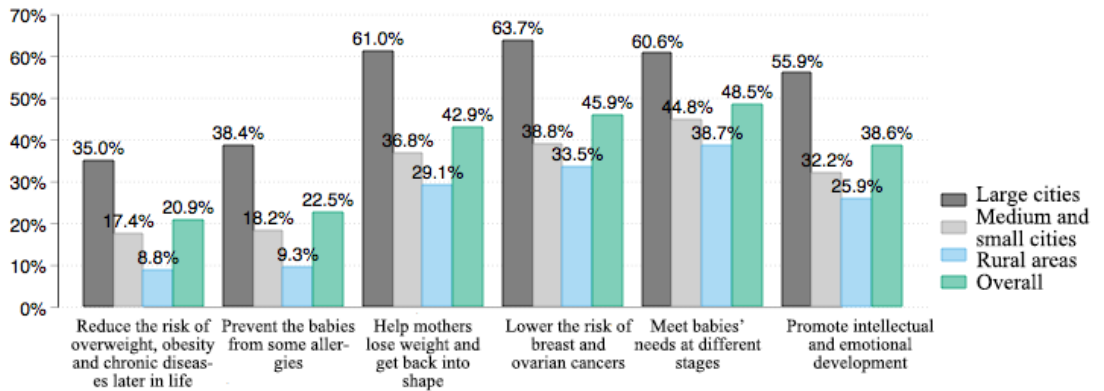
**Fig. 5.7: Perception of the benefits of breastfeeding and its impact on the rate of exclusive breastfeeding**



48.5% of the mothers were aware of the fact that breastfeeding can meet their babies' needs at different stages in an unparalleled way. 42.9% recognized that breastfeeding can help them lose weight and get back into shape; while 45.9% believed that breastfeeding can reduce the risk of breast and ovarian cancers. But only 22.5%, 20.9% and 38.6% of the mothers acknowledged the benefits of preventing allergies, reducing the risk of overweight, obesity and chronic diseases later in life, and promoting intellectual and emotional development of the babies, respectively.

A marked rural-urban gap was found in the knowledge of breastfeeding benefits. Large cities saw a generally higher rate of perception than medium and small cities. Rural areas lagged behind urban areas in this regard (see Fig. 5.8).

**Fig. 5.8: Perception of the benefits of breastfeeding**



## II. Institutional factors

### 1. Supports from medical and health institutions

The provision of breastfeeding knowledge and instructions by medical and health institutions for mothers during pregnancy, parturition and postpartum period has great implications for successful breastfeeding. It will help mothers solve feeding problems and difficulties that might be encountered, and build up their confidence in breastfeeding.

#### (a) Breastfeeding education programs offered by prenatal health facilities

Breastfeeding education programs offered by prenatal health facilities play a big part in mothers' access to breastfeeding knowledge during pregnancy. According to the present survey, prenatal education on breastfeeding can let mothers to know more about breastfeeding practices and significantly improve the rate of exclusive breastfeeding. As shown in Table 5.6, the rate of EBF of mothers who had accepted prenatal education on breastfeeding is 7.1% higher than mothers who didn't.

**Table 5.6: Prenatal education on breastfeeding and its impact on mothers' breastfeeding knowledge and the prevalence of exclusive breastfeeding**

Breastfeeding knowledge		Have they taken part in any prenatal education programs on breastfeeding?		P Value
		Yes	No	
Perception of breastfeeding techniques	Mothers aware of the importance of getting babies latched on the breast in the first hour of birth	22.1%	17.7%	P<0.001
	Mothers aware of the importance of feeding on demand	80.7%	76.9%	
Perception of breastfeeding benefits	Mothers who have recognized the benefits of breastfeeding in promoting intellectual and emotional development of the babies	42.0%	33.4%	P<0.001
	Mothers who have recognized the benefits of breastfeeding in meeting biological needs of the infants at different stages, in a way that other substitutes cannot compete with	53.7%	45.8%	
	Mothers who have recognized the benefits of breastfeeding in reducing the risk of overweight, obesity and chronic diseases later in life	24.3%	17.4%	
	Mothers who have recognized the benefits of breastfeeding in preventing infants from some allergies	25.4%	18.9%	
	Mothers who have recognized the benefits of breastfeeding in lowering the risk of breast and ovarian cancers	51.0%	43.0%	
	Mothers who have recognized the benefits of breastfeeding in helping mothers lose weight and get back into shape	49.0%	38.2%	
	The rate of exclusive breastfeeding		31.7%	

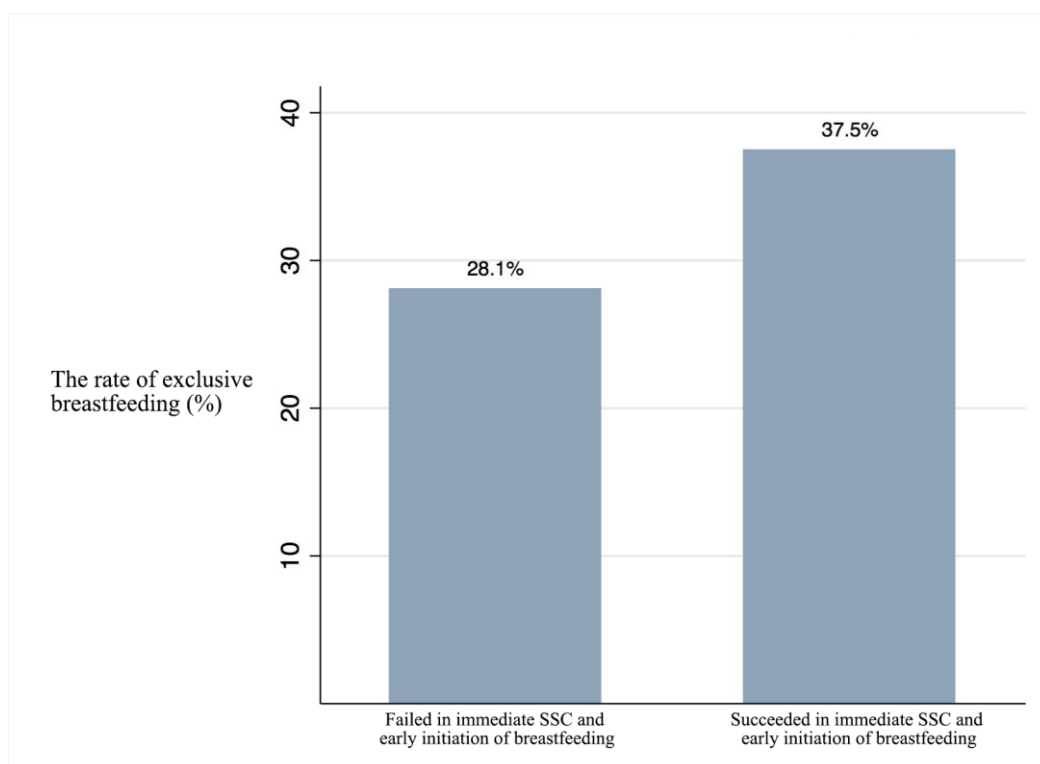
68.3% of the mothers took part in breastfeeding education programs offered by prenatal health facilities. The rate stood at 74.7% and 74.5% in large cities and rural areas, respectively, higher than 56.4% in small and medium cities.

**(b) Breastfeeding-related education and instructions received in hospital**

Hospital stays during child birth offer a vital chance for mothers to accept breastfeeding information, education and instructions. As shown by the survey results, 90.2% of mothers found it useful to accept breastfeeding information, education and instructions while in hospital.

Immediate SSC and early initiation of breastfeeding are important steps that need supports from medical and health institutions. It is crucial to support the mothers in initiating and establishing breastfeeding with their babies in the first hours of life. The WHO has suggested that medical and health institutions should facilitate and encourage immediate and uninterrupted skin-to-skin contact (SSC), and support mothers to start breastfeeding as soon as possible after birth, within the first hour after delivery<sup>[1]</sup>.

**Fig. 5.9: The impact of immediate SSC and early initiation of breastfeeding on the rate of exclusive breastfeeding**



According to the survey results, immediate SSC and early initiation of breastfeeding after birth have a significant effect on exclusive breastfeeding practices. Mothers who had succeeded in immediate SSC and early initiation of breastfeeding led by 9.4% ahead of the rest of the mothers in the rate of exclusive breastfeeding (see Fig. 5.9). The same conclusion has also been reached by multivariate regression analyses (OR 1.30, 95% CI: 1.07~1.57).

This survey asked the question about EIB as follows: “how soon after delivery did the babies start to latch on to the breast” or, in other words, “when did the newborn baby latch on regardless of whether the milk came in”. According to the results, only 11.3% of the infants had the first latch within the first hour of life. In particular, 19.2% of the infants in large cities started to suckle within one hour after birth, followed by 6.5% in medium and small cities and 7.6% in rural areas.

Many mothers who had encountered breastfeeding difficulties in hospital asked help from medical professionals. To be specific, 48.1% of the mothers sought help from medical professionals, 27.9% from lactation consultants, and 24.8% from family members. 20.1% of the mothers solved difficulties by themselves (as shown in Table 5.7).

**Table 5.7: How to seek help for breastfeeding difficulties encountered in hospital**

	Medical professionals	Lactation consultants	Family members	Relatives & friends	On their own	Nursing staff	Others
In hospital	48.1%	27.9%	24.8%	8.2%	20.1%	4.6%	2.2%

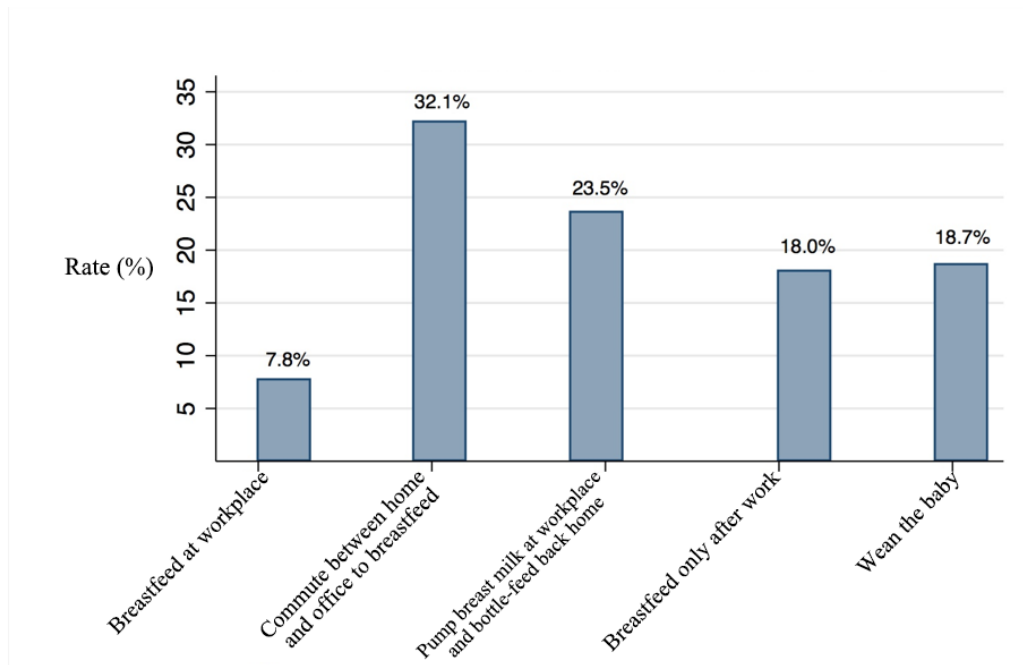
## 2. Supports from family

The attitudes of the family also influenced mothers’ breastfeeding decisions. According to the survey results, 89.4% of the mothers’ mother showed a support to breastfeeding practice, while 87.7% of their mother-in-law offered support to that, and 89.6% of the fathers supported breastfeeding. In particular, the attitude held by the fathers has exerted influence on exclusive breastfeeding practices up to six months. That is to say, mothers with a supportive husband showed a significantly higher rate of exclusive breastfeeding for babies under six months (OR 1.53, 95%CI: 1.19~1.95).

## 3. Supports from workplace

Supports from workplace can help back-to-work mothers to continue to breastfeed. Mothers have to juggle work with breastfeeding commitments. According to the survey results, 81.3% of the mothers continued to breastfeed at workplace after the maternity leave, but in different ways. 32.1% chose to commute between home and office to breastfeed, 23.5% pumped breast milk at workplace and bottle-fed back home, 7.8% breastfed at workplace, and 18.0% breastfed only after work (see Fig. 5.10).

**Fig. 5.10: Ways of breastfeeding after the maternity leave**



To facilitate mothers to breastfeed their babies or store pumped milk during the working hours, the employers shall allow adequate breastfeeding breaks and provide lactation rooms and refrigerators at the workplace. According to the *Special Provisions on Labor Protection of Female Employees* (《女职工劳动保护特别规定》), the employers shall arrange one hour out of the working hours every day for female employees during lactation period to feed their babies, and establish dedicated facilities like lactation rooms to meet their needs<sup>[21]</sup>. Much the same is advocated by the *Global Strategy for Infant and Young Child Feeding* (《婴幼儿喂养全球战略》) as one of the most effective measures to promote appropriate feeding for infants and young children<sup>[2]</sup>. These support policies for female employees will enable back-to-work mothers to continue breastfeeding and promote the prevalence of exclusive breastfeeding among infants under six months.

As indicated by the survey results, the provision of one hour for breastfeeding breaks per day, lactation rooms and refrigerators to keep breast milk at the workplace has played a great role in promoting exclusive breastfeeding under six months. They helped improve the rate of exclusive breastfeeding by 6.8, 7.1 and 12.1 percentage points, respectively, and increased the proportion of mothers who have continued breastfeeding after going back to the workplace by 21.3, 8.9, and 14.1 percentage points, respectively (see Table 5.8). The study incorporated workplace-related variables into the above mentioned multivariate regression

model, and found a significantly higher probability of exclusive breastfeeding up to six months among mothers whose employers provide refrigerators to keep breast milk at the workplace than that among mothers who have no access to refrigerators at the workplace (OR 1.32, 95%CI: 1.01~1.73) (see appendix Table 3).

**Table 5.8: Supports from workplace**

	The rate of exclusive breastfeeding			The rate of continued breastfeeding after returning to work	
Are there one-hour daily breastfeeding breaks?	Yes	36.1%	P<0.05	88.4%	P<0.001
	No	29.3%		67.1%	
Are there lactation rooms?	Yes	40.0%	P<0.05	88.5% <sup>c</sup>	P<0.001
	No	32.9%		79.6%	
Are there refrigerators to keep breast milk?	Yes	40.4%	P<0.001	88.8%	P<0.001
	No	28.3%		74.7%	

Speaking of the concrete supports for breastfeeding from the employers, 67.2% of the mothers were allowed to have one hour for breastfeeding breaks per day, 19.1% had access to lactation rooms at workplace, and 49.0% could store breast milk in refrigerators at the workplace. Though it is a lawful right of female workers during the lactation period to have one hour a day for breastfeeding at work, 32.8% of the formally employed mothers didn't enjoy this right. In addition, only a small portion of employers provided lactation rooms and refrigerators to keep breast milk at the workplace, far from enough to meet the mothers' need of continued breastfeeding after returning to work.

#### **4. Supports from public places**

Nursery rooms in public places have a great impact on breastfeeding prevalence. According to the survey results, the existing nursery rooms are far from enough to meet the needs of breastfeeding mothers. Only 10.2% of women involved in this study thought there are adequate nursery facilities in the areas they live, while 88.1% emphasized the need for more nursery rooms in public settings. 60.2% of the mothers went out less to save from the inconvenience of breastfeeding in public, and 27.4% had the experience of offering babies infant formula due to the inconvenience of breastfeeding in public. Mothers who used to give their babies infant formula due to the inconvenience of breastfeeding in public lagged behind by 7.7 percentage points in the rate of exclusive breastfeeding, and, as indicated



by the regression analyses, are much less likely to feed their babies under six months exclusively on breast milk (OR 0.69, 95%CI: 0.59~0.81).

Due to the conservative tradition, 77.9% of the mothers felt embarrassed to breastfeed in public, 30.3% felt embarrassed to breastfeed in front of female family members and friends, and 85.6% felt embarrassed to breastfeed in front of male family members and friends. To be specific, mothers who had found it uneasy to breastfeed in public stayed 4.6 percentage points lower in the rate of exclusive breastfeeding, and are much less likely to feed their babies under six months exclusively on breast milk (OR 0.75, 95%CI: 0.64~0.88).

### III. Social Structural Factors

#### 1. Regulation of breast-milk substitutes market

Since a long time ago, the international community has realized that the sale and promotion of breast-milk substitutes such as infant formula may have a negative impact on breastfeeding. In 1981, the World Health Assembly endorsed the *International Code of Marketing of Breast-milk Substitutes* (《国际母乳代用品销售守则》), which aims to strictly regulate the marketing of breast-milk substitutes, prevent inappropriate marketing of breast-milk substitutes, and enable mothers to make the best possible feeding choice, based on impartial information and free of commercial influences, and to be fully supported in doing so<sup>[23]</sup>. China has adopted relevant laws and regulations, such as the *Implementation Measures for the Law on Maternal and Infant Health Care* (《母婴保健法实施办法》), *Administrative Measures for the Marketing of Breast-milk Substitutes* (《母乳代用品销售管理办法》)<sup>4</sup>, and *Advertising Law* (《广告法》), have set forth clear regulatory provisions on the marketing of breast-milk substitutes such as infant formula.

According to survey data, however, producers and sellers of breast-milk substitutes are still promoting breast-milk substitutes to mothers and their family members through traditional media such as medical institutions, the Internet, television and radio, and multiple other channels such as shopping malls, relatives, friends and family members. For mothers of infants, these recommendations have significantly increased the possibilities of them to use infant formula as a breast-milk substitute for their children, thus reducing the rate of exclusive breastfeeding for the first 6 months of life (Table 5.9). Among the mothers of infants under 6 months of age, 50.8% of those had been advised to use infant formula, whereas only 20.0% of those who had not been advised to do so still used infant formula as breast-milk substitutes. The former added 30.8% more infant formula than the latter. Correspondingly, the exclusive breastfeeding rate for mothers who have

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<sup>4</sup> The Measures were abolished in 2017.

been advised to use infant formula is only 21.0%, which is 11.1 percentage points lower than that for mothers who have not been advised to do so. The regression analyses also indicate that, for mothers who have been advised to use infant formula, the rate of exclusive breastfeeding for the first 6 months of life is lower than that for mothers who have not been advised to do so (OR 0.54, 95% CI: 0.44 ~ 0.65).

**Table 5.9 Impact of recommendations for infant formula on breastfeeding**

	Have you been advised to use infant formula?		
	Yes	No	
Proportion of mothers using infant formula for the first 6 months of life	50.3%	19.6%	P<0.001
Rate of exclusive breastfeeding	21.0%	32.1%	P<0.001

The survey data further indicate that 25.9% of the mothers of infants under 6 months of age have been advised to add infant formula to the foods for their children. Among the mothers of infants under 6 months of age who live in large cities, 42.4% have been advised to use infant formula as a breast-milk substitute, representing the highest proportion. Second to this figure is a 27.1% proportion of mothers living in small and medium cities. In rural areas, the proportion is the lowest, i.e. only 20.0%.

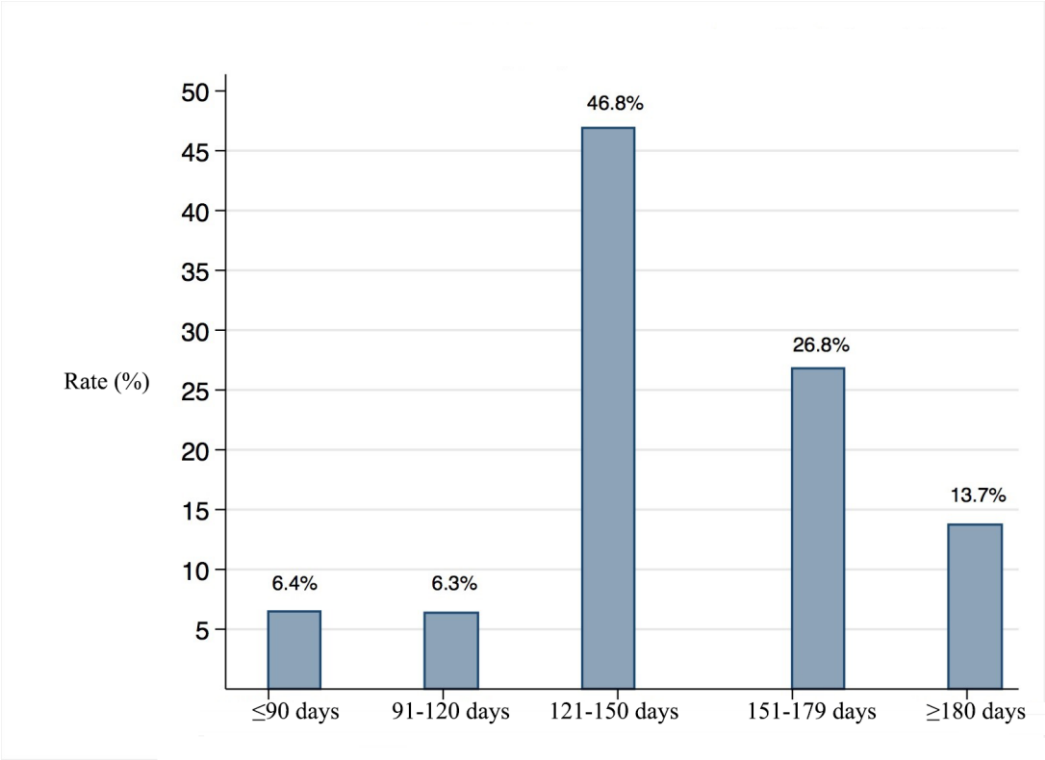
Mothers of infants receive infant formula recommendations from many sources. The Internet, medical and health institutions, and traditional media such as television and radio represent the three primary sources. According to the survey data, 42.6% of the mothers have received infant formula recommendations from maternal and child care facilities and maternity hospitals, 32.3% from the Internet, and 19.2% from traditional media such as television and radio.

## 2. Maternity leave policies

Paid maternal leave is a statutory right for female employees in China. The *Special Provisions on Labor Protection of Female Employees* (《女职工劳动保护特别规定》) issued by the State Council in 2012 clearly stipulates that all female employees are entitled to a 98-day paid maternity leave. The employers shall reserve the job and pay wages for the mother on maternity leave according to law<sup>[22]</sup>. The *Global Strategy for Infant and Young Child Feeding* (《婴幼儿喂养

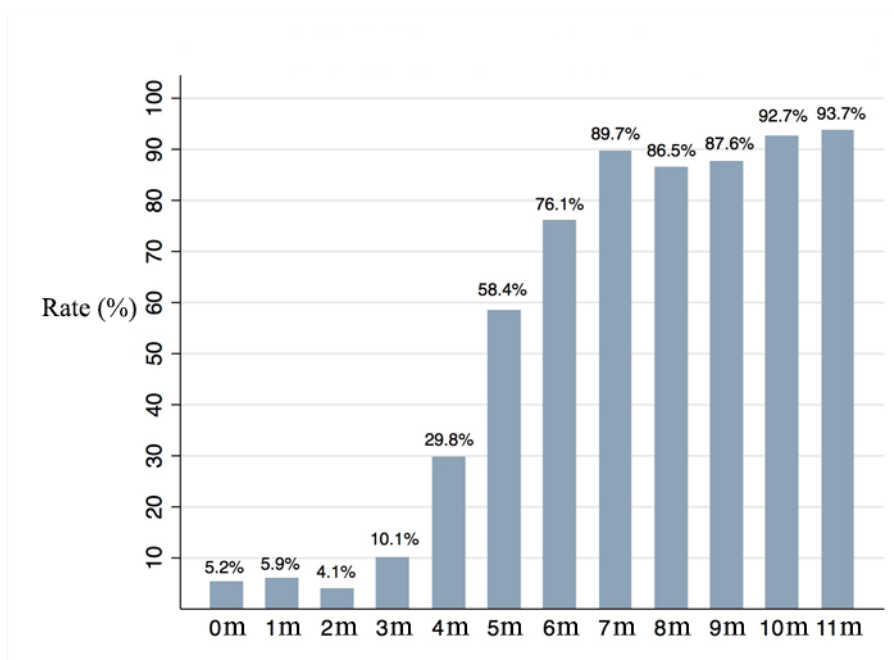
全球战略» ) also regards paid maternity leave as an important measure to promote breastfeeding<sup>[2]</sup>. According to survey data, 93.4% of mothers of infants entitled to paid maternity leave can take 98 or more days of maternity leave, but only 13.7% can take 180 or more days of maternity leave (Figure 5.11).

**Fig.5.11: The period of maternity leave for mothers of infants entitled to paid maternity leave**



In addition, the survey data show that the proportion of mothers returning to work increases significantly among mothers of infants above 3 months of age. Among mothers of infants of 0 to 2 months, the proportion of mothers returning to work is less than 6% of those who have paid maternity leave during this period. After 3 months, the proportion gradually increases, reaching 29.8% at 4 months and 58.4% at 5 months (Fig. 5.12).

**Fig. 5.12: The proportion of mothers returning to work who have paid maternity leave during 0-11 months of life**



For mothers of infants entitled to paid maternity leave, the length of maternity leave has a significant impact on whether they can exclusively breastfeed for the first 6 months and on the duration of continuous breastfeeding. The regression analyses show that the probability for mothers who have returned to work within 6 months to practice exclusive breastfeeding is significantly lower than that for mothers who have not yet returned to work (OR 0.60, 95% CI: 0.41 - 0.87). In addition, the survey data indicate that mothers returning to work after the maternity leave are significantly more likely to wean their children or use infant formula or other complementary foods as breast-milk substitutes, thus reducing the breastfeeding rate and the rate of exclusive breastfeeding for infants (Table 5.10). Specifically, among mothers who have weaned their children, those who have returned to work within 6 months account for a proportion that is 8.4% higher than that of mothers who are still on maternity leave. The proportions of mothers using infant formula and those using solid foods and semi-solid foods as breast-milk substitutes are 14.3% and 39.8% higher than the proportion of mothers who are still on maternity leave. The probability for mothers who have returned to work within 6 months to practice exclusive breastfeeding is 10.1% lower than that for mothers who have not yet returned to work.

**Table 5.10 Influence of the work recovery status of mothers on the practice of breastfeeding for babies within 6 months of age**

	After returning to work	During maternity leave	
Proportion of mothers weaning their children	11.1%	2.7%	P<0.001
Proportion of mothers using infant formula as breast-milk substitutes	48.7%	34.4%	P<0.01
Proportion of mothers using solid or semi-solid foods as breast-milk substitutes	47.1%	7.3%	P<0,001
Rate of exclusive breastfeeding	26.7%	36.8%	P<0,001

## **Section VI. Discussions and Policy Suggestions**

According to the above survey data analysis, it can be seen that whether the mothers of infants can practice breastfeeding in scientific manners depend on individual, institutional, and legal policy factors. The individual factors mainly include the health status of the mothers and infants and the individual's knowledge about breastfeeding. The institutional factors mainly include the supports for breastfeeding from medical and health institutions, families, employers and public places. The legal policy factors mainly include the maternity leave policies and the regulation of marketing of breast-milk substitutes.

The results of this survey also reveal that to further promote breastfeeding in China, there are a series of problems and challenges to address in individual, institutional and legal policy aspects. To resolve these problems and challenges, it is necessary to mobilize the resources and strength of the government, medical and health institutions, employers, society and families to establish a society-wide support system for breastfeeding.

### **I. Promoting the knowledge dissemination and technical support for breastfeeding**

The results of the survey show that the level of knowledge on breastfeeding has a large effect on whether the mothers of infants can practice breastfeeding in a scientific manner and on the rate of exclusive breastfeeding. Besides, breastfeeding knowledge involves many aspects, which all affect the way of breastfeeding to varying degrees. The more and the better the mothers of infants

masters knowledge and skills, the more capable they will be of practicing breastfeeding in the right way.

However, it can be seen from the survey results that the mothers of infants are often rather ignorant of some key knowledge about breastfeeding, and their knowledge about breastfeeding shows significantly regional differences. Nearly half of the mothers of infants do not understand that babies under 6 months of age should be breastfed, and nearly 80% do not understand that babies within 1 hour of birth should be fed with breast-milk as early as possible. The awareness of the above knowledge for mothers living in small and medium cities is significantly lower than that for mothers living in large cities and rural areas. In addition, in terms of the awareness of the benefits of breastfeeding, only 22.5% of the mothers of infants understand that breastfeeding can prevent infants from some allergies, and only 20.9% of them knows breastfeeding can reduce the risk of overweight, obesity and chronic diseases later in life. Less than 20% of the mothers living in small and medium cities are aware of the above knowledge; less than 10% of the mothers living in rural areas are aware of the above knowledge.

The survey results further reveal that medical and health institutions play an important roles in providing education and technical guidance on breastfeeding knowledge for mothers of infants. They can greatly improve mothers' perception of breastfeeding-related knowledge and help them solve the problems in their breastfeeding practice, thus improving the rate of exclusive breastfeeding for infants under 6 months. But medical and health institutions are still faced with problems and challenges in providing such support. First, the rate of participation in breastfeeding education provided by health-care institutions for pregnant women is yet to be increased. 31.7% of the mothers of infants failed to attend breastfeeding education programs if such programs are offered by health-care institutions for pregnant women. The non-participation rate for breastfeeding education is highest in small and medium cities, reaching 43.6%. In addition, it is particularly noteworthy that the reported proportion of infants with immediate SSC and early breastfeeding is only 11.3%, which is far lower than the world average of 45%<sup>[1]</sup>.

The *Global Strategy for Infant and Young Child Feeding* (《婴幼儿喂养全球战略》) emphasizes that technical support should be available from professional medical personnel to mothers before, during and after childbirth, so as to help them persist in breastfeeding by correct methods, prevent potential difficulties, and solve the problems and obstacles they may encounter during breastfeeding<sup>[2]</sup>. China's relevant laws, regulations and policies have set forth comprehensive and detailed provisions regarding the provision of support and assistance by medical and health institutions for breastfeeding. Further promotion of breastfeeding in China requires tightened enforcement of relevant laws, regulations and policies, additional efforts of medical and health institutions to strengthen their publicity of

breastfeeding knowledge and professional support, and effective measures to narrow the regional gaps in the breastfeeding support provided by such institutions.

Beijing has engaged in constructive explorations to mobilize community support for breastfeeding. To protect, promote and support breastfeeding, Beijing has adopted a mode for continuous management and comprehensive promotion of baby-friendly services in “hospitals, communities and families”, and has established more than 300 baby-friendly communities across the city since 2013. Established under the leadership of the government, “Baby-friendly Community” represents a municipal medical and health system for the promotion of community support for breastfeeding, which is aimed at strengthening community-based advocacy, promotion, support and services for breastfeeding. In every baby-friendly community, maternal and child care professionals are available to provide breastfeeding guidance for residents. Besides, breastfeeding hotline is available at each baby-friendly community. Residents who have difficulties and questions about breastfeeding may contact the baby-friendly community for help from medical personnel. In addition, some self-organized non-governmental organizations and mothers’ mutual aid organizations also provide community-based publicity and training sessions on breastfeeding knowledge for mothers of infants, and this has become an important part of the community support system for breastfeeding.

In order to explore ways of breastfeeding education and technical support for impoverished areas, China Development Research Foundation launched the “School for Mothers” program in 2009. Relying on maternal and child health care personnel at county, township and village levels, the “School for Mothers” provides pregnant and postpartum women and their families in impoverished areas with education on maternal and child health care, breastfeeding and complementary feeding through township/village community health service centers, so as to improve the nutrition and health of these women and their infants. Besides knowledge education, the “School for Mothers” also distributes multivitamin supplements (2 tablets per day) to pregnant and postpartum women and mothers in the breastfeeding stage. Additionally, the program provides “conditional cash payment” as subsidies for the participating families of women and children, so as to attract more participants. From 2009 to 2013, about 6,000 pregnant and postpartum women in 200 villages of 13 pilot towns of Ledu District, Qinghai Province and Xundian County, Yunnan Province participated in the program, and a total of 61 “Schools for Mothers” were established in the two places. According to the survey data, the rate of participation in breastfeeding education provided by health-care institutions for pregnant women in Ledu District and the proportion of mothers of infants receiving information that encourages breastfeeding have reached 77.9% and 72.6%, respectively, exceeding the average level for the rural areas involved in this survey. The rate of exclusive

breastfeeding in Ledu District is 27.1%, which is also close to the average level of 28.3% in the rural areas involved in this survey.

In addition, various network platforms, social media, television and radio have provided diverse forms and platforms for the dissemination of breastfeeding knowledge, and facilitated the publicity and education on breastfeeding knowledge and skills. The Internet and traditional media should be fully exploited to educate the general public on breastfeeding knowledge and skills for the public, popularize the correct methods and related knowledge of breastfeeding, increase the public awareness of breastfeeding, and create social and cultural atmosphere for breastfeeding.

Information transmission brought by the Internet have also brought new ways and approaches for medical and health institutions to support and promote breastfeeding. Using network platforms, some hospitals have opened online schools for pregnant women, offering them on-line lectures and consulting services. These online schools allow pregnant and postpartum women to learn health-care knowledge about pregnancy and childbirth anytime at home through mobile phones and computers, leading to significant increase in the number of participants. It is proved by research that accompanying and supporting fathers and other family members may significantly improve breastfeeding practices, prolong the duration of breastfeeding and increase both the rate of exclusive breastfeeding and the breastfeeding rate<sup>[2,17]</sup>. The online schools for pregnant women have also provided conveniences for fathers and other family members to participate in breastfeeding courses. In addition, the combination of medical institutions' professional resources and networks has facilitated the sharing of professional medical resources and the courses of schools for pregnant women among different regions, and also helped solve the problems of inadequate education on breastfeeding knowledge and skills in small and medium cities and rural areas, particularly impoverished areas, due to the lack of human and material resources.

## **II. Improving relevant laws and regulations and tightening the market regulation of breast-milk substitutes**

Promotions for breast-milk substitutes are permeating through mothers' and their family's daily lives, inducing mothers of infants to feed with infant formula, thus significantly increasing the possibilities of mothers using infant formula to feed their children and reducing the rate of exclusive breastfeeding. The Internet, medical and health institutions, and traditional media such as television and radio have all become promotional platforms and channels for infant formula. In addition, the promotion of infant formula shows significant regional differences. In large cities, 42.4% of mothers of infants under 6 months of age have been advised to use infant formula as a breast-milk substitute, a proportion that is far higher than in small and medium cities and rural areas.



With the tightening of the safety and quality inspection of infant formula and the launch of a series of regulatory policies, such as the new *Food Safety Law* (《食品安全法》) and the infant formula registration system, domestic-made infant formula is gaining trust with Chinese consumers<sup>[24]</sup>. The scale of China's retail market for infant formula reached RMB 118.9 billion in 2016. It is estimated that China's infant formula market will exceed RMB 170 billion by 2021<sup>[24]</sup>. The sales of breast-milk substitutes has constituted a major obstacle to the promotion of breastfeeding in China.

To eliminate the negative impacts of inappropriate sales of breast-milk substitutes on breastfeeding, the World Health Assembly passed the *International Code of Marketing of Breast-milk Substitutes* (《国际母乳代用品销售守则》) in 1981, which strictly prohibits advertising of breast-milk substitutes to the general public, selling breast-milk substitutes to mothers, or using such products at health-care institutions<sup>[23]</sup>. Article 1 of the Code states that “the aim of this Code is to contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of breast-milk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution”<sup>[23]</sup>. If babies are not breastfed, for whatever reason, the Code advocates that they should be fed safely on the best available nutritional alternative. But breast-milk substitutes should not be promoted.<sup>[23]</sup> The *Global Strategy for Infant and Young Child Feeding* regards “implementing and monitoring existing measures to give effect to the *International Code of Marketing of Breast-milk Substitutes*” as an important measure to promote health and nutrition of infants and young children<sup>[21]</sup>.

According to the statistics of the World Health Organization, 135 countries have enacted their own laws in accordance with the Code, 39 of them have incorporated all the provisions of the Code in their laws, and more than half of them prohibit advertising and promotion of breast-milk substitutes<sup>[25]</sup>.

China formulated the *Administrative Measures for the Marketing of Breast-milk Substitutes* (《母乳代用品销售管理办法》) in 1995 in accordance with the *International Code of Marketing of Breast-milk Substitutes* and in view of its particular national conditions. Imposing stringent restrictions on the sales of breast-milk substitutes, these Measures prohibited advertising of breast-milk substitutes and publicity of the same on the media in the form of reports, articles, and pictures, and stipulated that no pictures of infants or such terms as “humanized” and “maternized” may appear on the packaging labels of breast-milk substitutes, and that the labels shall bear remarks indicating the superiority of breast-milk feeding<sup>[26]</sup>. In the past two decades, the Measures have played a certain role in regulating the sales of breast-milk substitutes and promoting breastfeeding. However, due to the lack of an effective supervision and enforcement mechanism, weakness in enforcement and supervision, or absence thereof during the

implementation of the Measures<sup>[17]</sup>, inappropriate sales of breast-milk substitutes could hardly be eliminated. Driven by strong economic interests, the constantly emerging new marketing means and strategies as well as attempts to evade relevant laws also brought a greater number of new severe challenges to the market regulation of breast-milk substitutes. The Measures were abolished at the end of 2017<sup>[27]</sup>.

Since the *Administrative Measures for the Sales of Breast-milk Substitutes* (《母乳代用品销售管理办法》) were abolished, China has been in need of a special legislation to regulate the sales of breast-milk substitutes in all aspects. Only the *Measures for the Implementation of the Law on Maternal and Infant Health Care* (《母婴保健法实施办法》) and the *Advertising Law* (《广告法》) set forth some provisions regarding the market regulation of breast-milk substitutes. The former stipulates that medical and health care institutions may not publicize or recommend breast-milk substitutes to pregnant and postpartum women and families with infants; the packaging labels of breast-milk substitutes shall clearly indicate the superiority of breastfeeding; producers and sellers of breast-milk substitutes may not give away product samples to medical and health care institutions or conditionally provide them with equipment, funds and materials for marketing purpose<sup>[28]</sup>. The *Advertising Law* prohibits any advertisement on mass media or public places of dairy products, beverages and other foods for infants that is claimed to be able to fully or partially replace breast-milk<sup>[29]</sup>.

Obviously, there are still major gaps in these two laws in comparison with the requirements of the *International Code of Marketing of Breast-milk Substitutes* and in view of the actual needs for regulating the marketing of breast-milk substitutes in China.

### **III. Improving the maternity leave policy and maternity services policy**

With the rapid economic development, more and more Chinese women are getting employed, and they have increasingly become an indispensable part of the labor force. According to the *China Labor Market Development Report 2016* (《2016中国劳动力市场发展报告》) written by the Labor Market Center of Beijing Normal University, the labor participation rate for Chinese women is about 64%, far higher than the world average of 50.3%<sup>[30]</sup>.

The *Global Strategy for Infant and Young Child Feeding* regards paid maternity leave as an important measure to promote breastfeeding<sup>[2]</sup>. Research shows that paid maternity leave reduces the opportunity cost of breastfeeding by protecting women's employment and income during their pregnancy and after childbirth, thus increasing the possibilities for them to reach the optimal duration of breastfeeding<sup>[31]</sup>. Research by *The Lancet* further shows that the maternity leave policy may effectively increase the rate of exclusive breastfeeding<sup>[17]</sup>. As early as

the 1950s, China started to implement a 56-day paid maternity leave policy<sup>[32]</sup>. In 1988, the State Council issued the *Regulations on Labor Protection for Female Workers* (《女职工劳动保护规定》) which extended the maternity leave for female workers to 90 days<sup>[33]</sup>. The *Special Provisions on Labor Protection of Female Employees* issued (《女职工劳动保护规定》) by the State Council in 2012 clearly stipulates that all female employees are entitled to a 98-day paid maternity leave. The employers shall reserve the job and pay wages for the mothers on maternity leave according to law.<sup>[22]</sup>

In terms of the length of maternity leave that properly employed mothers of infants can take, 86.3% of the mothers can only take a maternity leave that is less than 6 months. Survey data shows that the length of maternity leave directly affects mothers' choice of feeding methods and the rate of exclusive breastfeeding for the first 6 months of life. For mothers who have returned to work, the proportion of those who opt to wean their children or use infant formula and other foods as breast-milk substitutes is significantly higher than that of those who have not returned to work. Moreover, as the proportion of mothers returning to work from three months of life onwards increases, the rate of exclusive breastfeeding shows a gradual downward trend.

If the maternity leave is extended to 6 months on the basis of the existing maternity leave system, it will undoubtedly promote exclusive breastfeeding for infants under 6 months of age. Since China implemented the "universal two-child" policy in 2016, all the provinces have successively revised their local regulations on population and family planning and extended the maternity leave by 30 to 90 days. Among others, Guangdong, Fujian, Hainan, Heilongjiang, Gansu and Henan Provinces have extended the maternity leave to 6 months. However, the maternity leave system is not isolated. To make the extension of maternity leave an inclusive policy, a supporting maternity insurance system has to be in place to secure reasonable institutional arrangements as to who is to bear the cost of the extended maternity leave.

According to the *Social Insurance Law of the People's Republic of China* (《社会保险法》), the benefits of maternity insurance include subsidies for maternity medical expenses and maternity allowances. All employees shall be covered by maternity insurance, and the premiums shall be paid by the employers other than the employees in accordance with relevant provisions of the State. Where the employer has paid the maternity insurance premiums, its employees shall be covered by the maternity insurance and entitled to the benefits thereof<sup>[34]</sup>. From the perspective of the legal system, the premiums of maternity insurance for corporate employees are entirely borne by the employers other than the State or individual employees. The *Special Provisions on Labor Protection for Female Workers* (《女职工劳动保护规定》) stipulates that, "maternity allowances for

female employees who have been covered by maternity insurance leave shall be paid from the maternity insurance fund in the amount of the employees' average monthly salary paid by the employer in the previous year; maternity allowances for those who are not covered by the maternity insurance shall be paid by the employer according to their salary standards before maternity leave.”<sup>[22]</sup> In addition, the maternity allowances for the extended part of maternity leave taken by corporate employees are still in the exploratory stage. At the level of national legislation, there have been no universal provisions as to who shall bear the maternity allowances for corporate employees taking an extended maternity leave. At the local level, all the provinces have made some exploratory studies on the provision of maternity allowances for employees taking an extended maternity leave. Most provinces have not included the extended maternity leave in the maternity insurance coverage. In their newly amended provincial regulations on population and family planning, most provinces require the employers to pay maternity allowances for the extended part of maternity leave. Other provinces require maternity allowances to be paid from the maternity insurance fund. There are also provinces that have not specified the source of salary for the extended part of maternity leave. In addition, all the newly amended regulations of various provinces on population and family planning have included provisions on maternity leave for men (paternity leave), ranging from 7 to 30 days. The allowances during such leave are borne by the employers and are not included in the maternity insurance coverage.

However, a number of studies show that, as the market economy develops to deeper levels, the drawbacks of the maternity insurance system undertaken by enterprises are increasingly prominent. The maternity insurance fund is raised in such a way that enterprises pay maternity insurance premiums to social insurance agencies according to a certain proportion of the total wages of their employees. The State and individuals do not pay for maternity insurance. On the one hand, this unitary form of insurance has increased the burden on enterprises and their labor cost, and a major gap exists between its fund-raising mode and the diverse and socialized forms of fund-raising required by the market economy. On the other hand, the higher the proportion of female employees, the higher the maternity cost that enterprise has to bear, thereby exacerbating employment discrimination against women<sup>[35,36]</sup>. In such a case, as stipulated by most provinces, maternity allowances for the extended part of the maternity leave and for the paternity leave are not included in the maternity insurance and are paid by the employers, plus the increasing number of women giving birth to the second child following the State's “universal two-child policy”, the employment cost of enterprises will undoubtedly increase further, resulting in heavier burdens on employers and the deterioration of the employment environment for women.

To improve breastfeeding and increase the rate of exclusive breastfeeding in China, we need to further improve our maternity leave policy and maternity insurance

policy to better protect the labor rights and breastfeeding right of female employees. First, national-level legislation should be brought in to extend the maternity leave to 6 months, so as to provide better system guarantee for mothers of infants to practice exclusive breastfeeding for the first 6 months of life. Besides, measures should be taken to incorporate the allowances for the extended part of the maternity leave and the paternity leave in the maternity insurance fund, to change the mode in which the premiums of maternity insurance for corporate employees are paid by the employers, increase the government's responsibility in the maternity insurance, balance the interests of the State, employers and employees, and implement a new mode in which the premiums of maternity insurance are shared by the State, employers and individuals<sup>[37]</sup>. This is also a hallmark of the international maternity insurance system<sup>[35]</sup>. A sound maternity leave system and maternity insurance system may provide support for female employees during the childbirth and lactation periods, reduce the burden on the employers, prevent and reduce gender-based discrimination in employment, and promote breastfeeding and increase the rate of exclusive breastfeeding.

#### **IV. Encouraging employers and public places to provide desirable environments and conditions for breastfeeding**

After returning to work, mothers of infants will face a series of problems and challenges in continuing breastfeeding. Breastfeeding support provided by employers for female employees during the lactation period, such as allowing one hour of breastfeeding per day and making available a breastfeeding room and a refrigerator for storing breast-milk, may effectively encourage the mothers of infants to continue breastfeeding after returning to work, and reduce the adverse impacts of childbirth and breastfeeding on their work performance and income.

The ILO Maternity Protection Convention (No. 183) and Recommendation (No. 191) require the adoption of relevant legislation and measures to ensure that mothers can continue practicing breastfeeding and taking care of their babies after returning to work.<sup>[38, 39]</sup> The World Health Organization further emphasizes that employers should support all women working in formal or informal sectors in continuing breastfeeding at the workplace<sup>[8]</sup>. According to the *Technical Guide on Child Feeding and Nutrition* (《儿童喂养与营养指导技术规范》) issued by the Ministry of Health, mothers who have returned to work shall be encouraged to continue practicing breastfeeding; they should breastfeed at least 3 times a day or squeeze out their breast-milk to maintain the secretion of breast-milk and prevent declines in lactation and early weaning<sup>[40]</sup>. In addition, a number of studies have proved that employers' support for breastfeeding and provision of convenient environments and conditions for nursing mothers to practice breastfeeding may help them build up the confidence to continue breastfeeding after returning to work, whereas the lack of such supportive environments may shorten the duration of their breastfeeding practices<sup>[41]</sup>. Supporting lactating mothers to continue breastfeeding after they return to work will also bring many benefits to the

employers<sup>[41]</sup>. First, breastfeeding is beneficial to the health of mothers and infants, which can reduce the possibilities of mothers being absent from their duties due to sickness or the need to take care of sick babies. Second, by providing a supportive environment for employees and help them balance the relationship between breastfeeding and work, the employers may effectively retain valuable employees and reduce the turnover rate. Third, active support for breastfeeding may help the employers establish a good corporate image among the general public.

However, judging from the existing systems and the implementation thereof, the support provided by employers for lactating mothers can hardly meet their needs for continued breastfeeding. China's *Special Provisions on Labor Protection for Female Workers* (《女职工特殊保护条例》) stipulates that the employers shall allocate one hour of breastfeeding time for female employees each day during the working hours and provide a lactation room according to the needs of the female employees<sup>[42]</sup>. According to the results of this survey, nearly half of the properly employed mothers of infants are actually unable to enjoy one hour of breastfeeding time per day. The proportion of mothers of infants for whom the employers provide lactation rooms is less than 20%.

International experience shows that employers can provide support for breastfeeding in many aspects, including: (1) developing policies to support breastfeeding at the workplace; (2) providing breastfeeding knowledge training for employees; (3) setting up lactation rooms; (4) allowing lactating female employees to work with a flexible schedule so that they can squeeze out breast-milk during work; (5) giving lactating female employees more options, such as long-distance work and part-time work; (6) establishing nurseries in or near the workplace; and (7) providing professional breastfeeding consultation service and support<sup>[43]</sup>. The promotion and adoption of such measures in the workplace depend on the employer's awareness of the social significance of breastfeeding and on their commitment to social responsibility. But, more importantly, relevant laws and regulations need to set forth corresponding rules and requirements for the employers to support breastfeeding, and relevant policy support should be in place.

In addition to workplaces, desirable environments and conditions for breastfeeding should be made available in public places as well, and this is crucial for the creation of social environments that is friendly to breastfeeding. With the implementation of the "universal two-child" policy and the increasing birth rate, there will be a significant increase in the demand for lactation rooms in public places such as airports, railway stations, shopping malls and tourist centers. According to the survey data, most of the mothers believe that there are not enough lactation rooms in their living areas, 60.2% have reduced their outdoor activities due to the inconvenience of breastfeeding in public places, and 27.2% opt to feed their children with infant formula because of the inconvenience of breastfeeding in public places.

In May 2013, UNICEF and the Maternal and Child Health Center of the China Center for Disease Control and Prevention jointly launched the “10m<sup>2</sup> of Love” campaign to promote breastfeeding rooms in public places. In 2016, the National Health and Family Planning Commission issued the *Guidelines on Accelerating the Construction of Mother-and-Child Facilities* (《儿童喂养与营养指导技术规范》), requiring that all public places and workplaces where maternal and infant facilities should be available shall be equipped with standardized maternal and infant facilities by the end of 2020<sup>[44]</sup>. Formulating and improving relevant standards for breastfeeding rooms and facilities and providing a better public environment for breastfeeding will undoubtedly help to further improve the breastfeeding situation in China.

## Section VII. Conclusion

Breastfeeding is an important public health strategy in China and an important indicator of the survival, protection and development of children. The Chinese law recognizes and protects breastfeeding as a basic right of mothers and infants. In addition, breastfeeding has also been incorporated into China’s development strategies and policies. The *Outline for the Development of Chinese Children (2011-2020)* (《中国儿童发展纲要(2011-2020年)》) issued by the State Council is aimed at improving and implementing relevant policies supporting breastfeeding and promoting breastfeeding as an important measure to improve the nutrition of children in China. The Outline also sets forth the goal of achieving a 50% rate of exclusive breastfeeding for infants up to 6 months of age by 2020. Following the guidelines of improving the health of all Chinese people and laying a solid foundation for the construction of a healthy China, the *National Nutrition Plan (2017-2030)* (《国民营养计划(2017-2030)》) issued by the State Council in 2017 incorporated the targets of further improving the breastfeeding support system and the breastfeeding environment and increasing the rate of breastfeeding as an integral part of the nutrition and health actions for the first 1,000 days of life.

However, breastfeeding remains a major public health issue faced by the nation. According to the results of this survey covering 12 points across China, the rate of exclusive breastfeeding for the first 6 months of life is only 29.2%, which still falls short of the goal of 50% by 2020 set forth in the *Outline for the Development of Chinese Children (2011-2020)* (《中国儿童发展纲要(2011-2020年)》) and the *National Nutrition Plan (2017-2030)* (《国民营养计划(2017-2030)》),<sup>[10,11]</sup> and is far below the world average of 43%<sup>[11]</sup>.

The results of this survey show that breastfeeding in China is restricted by many factors and faced with a series of problems and challenges, including insufficient public awareness of breastfeeding, the urgent need for medical and health

institutions to strengthen breastfeeding education and support, the lack of effective supervision over the marketing of breast-milk substitutes, the relatively short maternity leave that inhibits mothers of infants from continuing breastfeeding after they return to work, insufficient breastfeeding facilities in workplaces and public places, and significant regional differences in the status of breastfeeding. To resolve these problems and challenges, it is necessary to formulate and improve relevant laws, regulations and policies, mobilize the resources and strength of the government, medical and health institutions, employers, society and families, and establish a society-wide joint support system for breastfeeding, so as to provide an environment where the breastfeeding practices of mothers of infants are fully supported, protected and facilitated.

First, developing a correct understanding of breastfeeding is the premise of scientific breastfeeding. Society-wide campaigns for the publicity, education and popularization of breastfeeding knowledge should be carried out through various communication channels to improve the public awareness of breastfeeding and create a social and cultural atmosphere that supports breastfeeding.

Secondly, medical and health institutions should increase their support for breastfeeding. Efforts should be made to give full play to the core role of medical and health institutions in providing education and technical support for breastfeeding, improve the level of knowledge and skills of medical personnel, provide all-round breastfeeding education and professional technical support for mothers of infants before, during and after childbirth, let them and their families master the breastfeeding knowledge and skills, help them solve difficulties and problems in breastfeeding, and enable them to practice breastfeeding in a scientific manner.

Third, in order to eliminate the adverse effects brought by the marketing of breast-milk substitutes to breastfeeding, a special legislation should be enacted as soon as possible to fill the legal gap left by the abolishment of the *Administrative Measures for the Sales of Breast-milk Substitutes* (《母乳代用品销售管理办法》) and to effectively regulate the sales market of breast-milk substitutes in all aspects. In addition, enforcement of the *Advertising Law* (《广告法》) should be tightened to prohibit any advertisement on mass media or public places of dairy products, beverages and other foods for infants that is claimed to be able to fully or partially replace breast-milk.

Fourth, paid maternity leave is an important measure to promote breastfeeding. The maternity leave system should be further improved, extending the existing statutory maternity leave from 98 days to 6 months, and the corresponding maternity insurance system should be perfected to provide better institutional guarantee for mothers of infants to practice exclusive breastfeeding in the first 6 months of life.



Fifth, the employers should be encouraged and supported to provide sufficient support and a good environment for their lactating female employees. Labor departments and trade unions may, through formulating relevant laws, regulations and policies, encourage the employers to provide comprehensive support for breastfeeding, such as setting up lactation rooms and allowing lactating female employees to work with a flexible schedule, so as to ensure that lactating mothers can continue breastfeeding after returning to work. Besides, relevant government departments should incorporate the recommendations regarding mother-and-child facilities in public places into relevant construction plans to create a good environment for breastfeeding mothers away from home.

Sixth, effective measures should be taken to raise awareness, strengthen the support from medical and health institutions and tighten the regulation of the sales of breast-milk substitutes, so as to narrow the gap in breastfeeding among large cities, small and medium cities and rural areas, and improve the breastfeeding situation in China as a whole.

It is not only the responsibility of the parents of infants and their families, but also the responsibility of the State and the whole society to improve the breastfeeding situation in our nation. Only by establishing a sound breastfeeding support system and creating a fully supported breastfeeding environment for mothers of infants can we effectively improve the breastfeeding situation in our nation, ensure the healthy growth of children and achieve the goal for a healthy China set at the 19th CPC National Congress.

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## Annex

**Annexed Table 1 Analysis of factors influencing immediate SSC and early breastfeeding**

Variable	OR value (95% CI)
Place of residence (with large cities as reference)	
Small and medium cities	0.32 (0.27-0.38)***
Rural areas	0.43 (0.35-0.52)***
Boy	1.12 (0.99-1.27)*
First-born	0.84 (0.73-0.98)**
Mother's nationality is Han	0.98 (0.95-1.01)
Mother's Age (with the 25-year-old age group as reference)	
26 to 35 of age	0.94 (0.79-1.12)
36 and above	0.98 (0.76-1.27)
Mother's educational background (with junior high school and below as reference)	
High school/secondary technical school/vocational school	1.24 (1.02-1.51)**
Junior college and above	1.89 (1.55-2.30)***
Type of employment (with formal employment as reference)	
Informal employment	1.02 (0.82-1.27)
Unemployed	1.45 (1.20-1.74)***
Caesarean section	0.60 (0.52-0.69)***
Low birth weight	0.57 (0.39-0.84)***
Mother had diabetes or hypertension during pregnancy	0.66 (0.52-0.85)***
Number of samples	9,971

Note:

1. The regression results shown in the table are estimated using the logistic model, and the explained variables are virtual variables indicating early or late breastfeeding.
2. In parentheses are the lower and upper limits of the robust 95% confidence interval for the corresponding coefficients.
3. \*\*\*, \*\* and \* indicate prominence at the level of 1%, 5%, and 10%, respectively.

**Annexed Table 2 Analysis of factors influencing exclusive breastfeeding**

Variable	OR value (95% CI)
Place of residence (with large cities as reference)	
Small and medium cities	0.63 (0.53 - 0.75)***
Rural areas	0.76 (0.62 - 0.93)***
Boy	0.99 (0.87-1.12)
First-born	0.87 (0.75 - 1.01)*
Months of life	0.87 (0.84 - 0.90)***
Mother's nationality is Han	0.98 (0.96-1.01)
Mother's Age (with the 25-year-old age group as reference)	
26 to 35 of age	0.94 (0.79-1.12)
36 and above	0.76 (0.58 - 0.99)**
Mother's educational background (with junior high school and below as reference)	
High school/secondary technical school/vocational school	1.13 (0.93 - 1.36)
Junior college and above	1.27 (1.05 - 1.55)**
Type of employment (with formal employment as reference)	
Informal employment	0.94 (0.77 - 1.16)
Unemployed	0.88 (0.73 - 1.07)
Keep the babies latched on to the breast before milk comes in	1.44 (1.12 - 1.85)***
Early initiation breastfeeding	1.30 (1.07 - 1.57)***
Understand that the breast-milk lactated within 7 days of delivery is colostrum	1.13 (0.96 - 1.33)
Know about exclusive breastfeeding	1.55 (1.36 - 1.78)***
Understand that baby's sucking is the most effective way to stimulate breast-milk	1.03 (0.85 - 1.24)
Know about breastfeeding as needed	1.31 (1.11 - 1.55)***
Know about the benefits of breastfeeding	1.06 (1.02 - 1.10)***
Child is sick after birth	0.77 (0.67 - 0.87)***
Father of the infant supports breastfeeding	1.53 (1.19 - 1.95)***
Received pregnancy health care	1.06 (0.78 - 1.43)
Received information that encourages breastfeeding	1.17 (1.00 - 1.38)*
Caesarean section	0.81 (0.71 - 0.93)***
Received recommendation to feed with infant formula	0.55 (0.46 - 0.65)***
Received infant formula giveaways	1.14 (0.95 - 1.37)
Feel embarrassed to breast-feed in public places	0.75 (0.64 - 0.88)***
Experience of substituting infant formula due to the inconvenience of breastfeeding in public places	0.69 (0.59 - 0.81)***
Number of samples	4,993

Note:

1. The regression results shown in the table are estimated using the logistic model, and the explained variables are virtual variables indicating whether or not breastfeeding is practiced.
2. In parentheses are the lower and upper limits of the robust 95% confidence interval for the corresponding coefficients.
3. \*\*\*, \*\* and \* indicate prominence at the level of 1%, 5%, and 10%, respectively.

**Annexed Table 3 Analysis of factors influencing exclusive breastfeeding**

Variable	OR value (95% CI)
Place of residence (with large cities as reference)	
Small and medium cities	0.56 (0.40 - 0.78)***
Rural areas	0.58 (0.32 - 1.05)*
Boy	1.04 (0.81 - 1.33)
First-born	0.80 (0.61 - 1.05)
Months of life	0.97 (0.90 - 1.05)
Mother's nationality is Han	0.97 (0.92 - 1.03)
Mother's Age (with the 25-year-old age group as reference)	
26 to 35 of age	1.03 (0.65 - 1.63)
36 and above	0.77 (0.44 - 1.36)
Mother's educational background (with junior high school and below as reference)	
High school/secondary technical school/vocational school	0.76 (0.29 - 1.99)
Junior college and above	1.26 (0.54 - 2.90)
Keep the babies latched on to the breast before milk comes in	2.32 (1.27 - 4.24)***
Early initiation of breastfeeding	1.35 (0.95 - 1.91)*
Understand that the breast-milk lactated within 7 days of delivery is colostrum	0.96 (0.68 - 1.36)
Know about exclusive breastfeeding	1.74 (1.34 - 2.28)***
Understand that baby's sucking is the most effective way to stimulate breast-milk	1.14 (0.70 - 1.87)
Know about breastfeeding as needed	0.98 (0.69 - 1.39)
Know about the benefits of breastfeeding	1.13 (1.06 - 1.20)***
Child is sick after birth	0.68 (0.53 - 0.87)***
Father of the infant supports breastfeeding	1.70 (1.15 - 2.52)***
Received pregnancy health care	0.98 (0.56 - 1.72)
Received information that encourages breastfeeding	0.79 (0.52 - 1.18)
Caesarean section	0.72 (0.55 - 0.93)**
Received recommendation to feed with infant formula	0.63 (0.47-0.84)***
Received infant formula giveaways	1.02 (0.72 - 1.43)
Feel embarrassed to breast-feed in public places	1.12 (0.80 - 1.55)
Experience of substituting infant formula due to the inconvenience of breastfeeding in public places	0.59 (0.45 - 0.78)***
Refrigerators are available at workplaces	1.32 (1.01 - 1.73)**
The mother has returned to work	0.60 (0.41 - 0.87)***
Number of samples	1,347

Note:

1. The regression results shown in the table are estimated using the logistic model, and the explained variables are virtual variables indicating whether or not breastfeeding is practiced.
2. In parentheses are the lower and upper limits of the robust 95% confidence interval for the corresponding coefficients.
3. \*\*\*, \*\* and \* indicate prominence at the level of 1%, 5%, and 10%, respectively.