Breastfeeding Rates and Affecting Factors in Metropolitan City

Hyun-Li Kim¹ and Jae-Ran Lim²*

¹College of Nursing, Chungnam National University, Daejeon, 301-747, South Korea; hlkim@cnu.ac.kr
²Department of Nursing, Daejeon Health Sciences College, Daejeon-300-711, South Korea; jrlim@hit.ac.kr

Abstract
This study aims to investigate breastfeeding rates and factors affecting exclusive breastfeeding. The participants were 3,875 women who each had a child aged 12 months or over. Data was collected from 2010 to 2013. Logistic regression result analysis shows that exclusive breastfeeding of at the one-month and six-month stage differed significantly according to birth weight, birth order, type of delivery, educational and employment status of the mother, in addition to the experience of attending breastfeeding education classes. Exclusive breastfeeding in the one-month and six-month groups decreased slowly year-on-year. Therefore, it is necessary to raise public awareness about the significance of exclusive breastfeeding and to develop institutional strategies to support working mothers who are willing to breastfeed their babies for at least six months after childbirth.

Keywords: Birth Order; Birth Weight, Breastfeeding

1. Introduction
Breastfeeding offers optimal nutrients to new born babies and enhances maternal recovery and wellbeing. Breast milk is very important for babies as it is naturally produced and provided as the first food. It is well known that mother’s milk provides crucial nutrients as well as energy for babies and provides at least half their nutritional needs for the first six months¹². Furthermore, breastfeeding benefits sensory and cognitive development while protecting the infant from various diseases, helps babies quickly recover from illnesses and reduces infant mortality caused by usual infant illnesses such as diarrhoea or pneumonia³. The beneficial effects of breast feeding on health are not limited to babies’ wellbeing. Other good features of breastfeeding improve maternal health. Feeding babies only breast milk helps to control fertility, reduces the chances of mothers to suffer from ovarian and breast cancer and increases family and national feeding resources⁴⁵.

The World Health Organization (WHO) and the UK government have strongly recommended exclusive breastfeeding for at least six months due to these advantages⁶. In addition, the UK suffered from an increased incidence of illness caused by low breastfeeding rates which led to significant cost to the health service. The WHO recommends that public health policy for exclusive breastfeeding for six months needs to be established by each national government⁷⁸.

Social recognition of breastfeeding for the last 30 years seems to be different, however, from currently recommended knowledge about exclusive breastfeeding. Due to increasing numbers of women entering the workforce and the development of compounding techniques to produce infant formula milk powder, the common assumption in societies was that the advantages of this powered formula were progressive and it was widely accepted as an alternate food for babies, leading to decreasing rates of breast milk feeding all over the world⁹¹⁰. In order to reform public misunderstanding about breastfeeding versus artificial feeding, the WHO and UNICEF conducted an international campaign aimed at increasing breastfeeding rates. Study findings verified the effectiveness of exclusive breastfeeding on maternal and child health. As a result, practical guidelines were drafted, such as the 10-step successful breastfeeding plan and the Baby-Friendly
Hospital Initiative (BFHI) encourages health care centers to participate toward effective application of the 10-step plan in maternal education which is offered in clinical settings. Globally, UNICEF’s investigation showed that less than 40% of infants receive exclusive breastfeeding while under six months of age. It is common for poor women in South East Asian countries to practice exclusive breastfeeding. In the countries such as Cambodia, the Solomon Islands and Sri Lanka more than three quarters of infants are exclusively breastfed, in India about half, and in the Philippines, Indonesia and Malaysia approximately one third. Exclusive breastfeeding rates are low, in Thailand and Vietnam, less than one fifth.

According to national data in 2013, the rate of exclusive breastfeeding in Korea has decreased over time to 56.7% in the one to two month age bracket, to 32.3% for those up to five months of age and to 11.4% in the six month age bracket. The Ministry of Health and Welfare suggested that infantile health needed to be selected as a main subject of the 2020 Health Plan because improvement of health in babies plays a crucial role in promoting a healthy next generation at national level. Consequently, our central government outlined the specific goal to increase exclusive breastfeeding rates in the one month age category to 70% and those in the six month age category to 60% by 2020. Despite these national concerns and effort, the actual rate of exclusive breastfeeding is reported not to reach its expected levels and it is also reported in Eum and Jung et al. Breastfeeding is not only an instinctual drive but also a learned behavior that is changeable over time. Many research papers showed that mothers and other caregivers need active supports for them to start and keep on appropriate breastfeeding practices. In order to provide evidence that can be used for practical program development, this study was conducted to determine predictors of exclusive breastfeeding for one month after birth and up to six months, as recommended by the WHO.

2. Methodology

2.1 Study Design
The research is designed to be descriptive and cross-sectional to understand the difference in predictors of exclusive breastfeeding for one month and six months after birth, respectively.

2.2 Study Sample
The participants of this study were 3,875 mothers who each had a child of 12 months of age or older. All participants were recruited from a health center in city D from 2010 to 2013.

2.3 Study Measures and Procedures
The questionnaire instruments for this study were developed by mother and child health professional business team members according to Ministry of Welfare and Health guideline. Information about delivery and breast milk feeding and general characteristics were assessed. Data collection was conducted by telephone interviews and it took about 10 minutes to complete all procedures of data collection in community health center. And in this study, secondary analysis of this data was conducted.

2.4 Data Analysis
Chi-square analysis was used to investigate differences in exclusive breastfeeding according to general characteristics. Logistic regression was performed to investigate factors affecting exclusive breastfeeding. All statistical analyses were conducted with SPSS version 19.0.

3. Findings

3.1 Sample Characteristics
Male births at 2,007 babies (51.8%) were higher than female births at 1,868 (48.2%). 47% of these ranged from 3,000g to 3,500g and higher in birth weight, with the remainder ranging from 2,999g to 2,500g and lower. For 47.9% of the participants it was the first baby, with it being the second or third child for the remainder. The mothers ranged from 20-34 years old and 63%, natural delivery was higher than c-sec. Employed mothers stood at 26.7%, while mothers who graduated from college (64.3%) were higher than mothers who graduated solely from high school (35.7%). The rate of mothers participating in education for breastfeeding was 33.9%, with the rate of non-participating mothers at 66.1%. A statistically significant difference for one month exclusive breast milk feeding was in birth weight (p=.003), birth ranking (p=.001), age of mother (p=.045), type of delivery (p=.004), employment of mother (p=.001), education level of mother (p=.010), participation in the education for breast milk feeding (p=.005) but with no significant

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difference in baby gender. A statistically significant difference for six-month exclusive breast milk feeding was in birth weight (p=.003), birth ranking (p<.001), type of delivery (p<.001), employment of mother (p<.001), education level of mother (p=.026), and participation in the education for breast milk feeding (p=.001). There were no significant differences in baby’s gender and the mother’s age as in Table 1.

3.2 Factors Affecting One-month Exclusive Breastfeeding

Factors affecting one-month exclusive breastfeeding were birth weight, birth ranking, type of delivery, employment, specific education attendance on breastfeeding and the education attainment level of the mother. The following indicators are significant for breastfeeding potentialities. Breastfeeding was 1.927 times more likely to happen for babies in the 2,500 – 2,999g birth weight range than those weighing lower than 2,500g (95% CI = 1.328 ~ 2.796, p=.007); earlier birth order rankings increase the likelihood, with a first baby being 1.628 times more likely to be breastfed than a third baby (95% CI = 1.246 ~ 2.126, p<.001); naturally delivered babies are 1.170 times more likely to be breastfed than c-section babies (95% CI = 1.005 ~ 1.364, p=.043); housewives are implementing 1.366 times more breastfeeding than working mothers (95% CI = 1.161 ~ 1.607, p<.001); mothers who attended education on breastfeeding are 1.272 times more likely to breastfeed than those who did not (95% CI = 1.077 ~ 1.478, p=.004); and the higher the mothers’ education level the more likely, 1.242 times, they implement breastfeeding (95% CI = 1.064 ~ 1.451, p=.006). The Hosmer-Lomeshow assumptive model was appropriate to measure suitability in our design (p=.116) as in Table 2.

Table 1. Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>One-month</th>
<th>Six-month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>Yes (%)</td>
<td>No (%)</td>
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<tr>
<td>Baby’s gender</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>2007(51.8)</td>
<td>1490(74.2)</td>
<td>517(25.8)</td>
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<td>Female</td>
<td>1868(48.2)</td>
<td>1393(74.6)</td>
<td>475(25.4)</td>
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<tr>
<td>Birth wt. of child</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤2499g</td>
<td>154(4.0)</td>
<td>95(61.7)</td>
<td>59(38.3)**</td>
</tr>
<tr>
<td>2500–2999g</td>
<td>742 (19.1)</td>
<td>564(76.0)</td>
<td>178(24.0)</td>
</tr>
<tr>
<td>3000–3499g</td>
<td>1927(49.7)</td>
<td>1438(74.6)</td>
<td>489(25.4)</td>
</tr>
<tr>
<td>≥3500g</td>
<td>1052(27.1)</td>
<td>786(74.7)</td>
<td>266(25.3)</td>
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<td>Birth rank</td>
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<tr>
<td>First</td>
<td>1856(47.9)</td>
<td>1330(71.7)</td>
<td>526(28.3)**</td>
</tr>
<tr>
<td>Second</td>
<td>1596(41.2)</td>
<td>1221(76.5)</td>
<td>375(23.5)</td>
</tr>
<tr>
<td>≥Third</td>
<td>423(10.9)</td>
<td>332(78.5)</td>
<td>91(21.5)</td>
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<td>Mother age</td>
<td></td>
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<td>≤19</td>
<td>16(0.4)</td>
<td>7(73.8)</td>
<td>9(26.2)*</td>
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<td>20–34</td>
<td>3087(79.7)</td>
<td>2318(75.1)</td>
<td>769(24.9)</td>
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<td>≥35</td>
<td>772(19.9)</td>
<td>558(72.3)</td>
<td>214(27.7)</td>
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<td>Delivery type</td>
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<tr>
<td>Vaginal</td>
<td>2449(63.2)</td>
<td>1860(75.9)</td>
<td>589(24.1)**</td>
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<td>C-section</td>
<td>1426(36.8)</td>
<td>1023(71.7)</td>
<td>403(28.3)</td>
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<td>Employment</td>
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<td></td>
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<td>1036(26.7)</td>
<td>729(70.4)</td>
<td>307(29.6)**</td>
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<td>No</td>
<td>2839(73.3)</td>
<td>2154(75.9)</td>
<td>685(24.1)</td>
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<tr>
<td>Edu. Level(b)</td>
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<td></td>
<td></td>
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<td>≤High school</td>
<td>1385(35.7)</td>
<td>997(72.0)</td>
<td>388(28.0)*</td>
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<td>≥College</td>
<td>2490(64.3)</td>
<td>1886(75.7)</td>
<td>604(24.3)</td>
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<td>Edu.about bf(c)</td>
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<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>1315(33.9)</td>
<td>1015(77.2)</td>
<td>300(22.8)**</td>
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<tr>
<td>No</td>
<td>2560(66.1)</td>
<td>1868(73.0)</td>
<td>692(27.0)</td>
</tr>
</tbody>
</table>

*(a) indicating birth weight of child; (b) indicating education level; (c) indicating education about breastfeeding.

*p < .05, **p < .01, ***p < .001
3.3 Factors Affecting Six-month Exclusive Breastfeeding

Factors affecting six-month exclusive breastfeeding were birth weight, birth ranking, type of delivery, employment, specific education attendance on breastfeeding and the education attainment level of the mother. The following indicators are significant for breastfeeding potentialities. Breastfeeding was 1.874 times more likely to happen for babies with a birth weight of 3,500g than those weighing lower than 2,500g (95% CI = 1.318 ~ 2.664, P=.006); earlier birth order rankings increase the likelihood, with a first baby being 1.806 times than third baby (95% CI = 1.443 ~ 2.260, p<.001); naturally delivered babies are 1.238 times more likely to be breastfed than c-sec babies (95% CI = 1.082 ~ 1.417, p=.002); housewives showed 1.963 times more chances to breastfeed than working mothers (95% CI = 1.694 ~ 2.275, p<.001); mothers who attended education on breast milk feeding are 1.272 times more likely to breastfeed than those who did not (95% CI = 1.108~1.460, p=.001); and the mothers with higher education level showed more chances, 1.641 times, to breastfeed (95% CI = 1.282 ~ 2.092, p=.001).

The Hosmer-Lomeshow assumptive model was appropriate to measure suitability in our design (p=.442) as in Table 3.

3.4 Four-year Changes in Breastfeeding

Exclusive breastfeeding rates for the one-month group and the six-month group have decreased slowly year-on-year since 2010. Exclusive breast feeding rates for one-month was 79% in 2010, 72.9% in 2011, 76.2% in 2012, 65.5% in 2013 and the EBF rate for 6 months was 55.1% in 2010, 54.4% in 2011, 56% in 2012 and 51.7% in 2013 as in Figure 1.

4. Discussion

This study was conducted to identify exclusive breastfeeding rates at the one month and six-month stages and factors associated with exclusive breastfeeding rates at both time points. Logistic regression analyses show that birth weight, birth order ranking, type of delivery, employment of mother, attendance in specific breastfeeding education and the level of education attained by the mother were dependent variables on whether exclusive breast milk feeding occurred at the one-month or six-month stage. Our findings substantiate Parks’ research which demonstrates that breast milk feeding rates are higher in earlier birth order ranked babies. A considerable
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programs at the initiation and duration of breastfeeding is needed. Also studies to analyze the effect of marital status at different age group are suggested.

In this study annual rates of exclusive breastfeeding have decreased slowly from 2010 to 2013. This rate was consistent with national data with a slight decrease in 2012 as in Kim (2012). But this study community has a higher rate in six-month extensive breastfeeding rates, 51.7 % compared with national data of 32.3 % and in one-month EBP rates of 65.5 %, which is about 9 % higher than national data of 56.7 %.

National effort has been put to develop various policies for improving breast feeding rate. However, findings of this study revealed a slight decrease in breast-feeding rates over time. It indicates a noticeable gap between actual situations women experienced and ideal goal toward successful improvement in extensive breastfeeding. That is, the number of mothers aged 35 and older has increased every year and they seemed to be exposed to more health problems and difficulties in conducting breast-feeding than young mothers. Pregnant women older than 35 years of age face increased risks of age related illnesses such as hypertension, diabetes and premature or low birth weight babies. Korea Institute for Health and Social Affairs showed that such babies were delivered to this age group more frequently than to any other age group in the research 2013.

Eighty percent of mothers made plans for breastfeeding but only about 30 % of them practiced it and 60 % of mothers gave up the practice within one month of birth. The chances of breastfeeding are less likely in older age groups than other groups, so this suggests a need for a schematic system of care for Advanced Maternal Age Women.

The World Health Organization suggests mothers should initiate breastfeeding to new born infants within one hour of birth and feed the babies only breast milk for the first six months. Continued breastfeeding until the babies grow up to two years old and beyond is also recommended. Adequate complementary foods should be implemented beginning at the age of six months. In particular, WHO emphasized that properly managed and implemented breastfeeding campaign will be helpful in saving babies and children more than any other single preventive intervention. The advantages of breastfeeding can be listed as follows: children will get fewer infectious and chronic diseases such as diabetes, obesity, cancers in later life; they have higher Intelligence Quotients; they also have higher earning potential and more opportunities to prioritize education; and their mothers are healthier. We

realization is the benefit and usability of breastfeeding according to the mother’s experience. Factors affecting breastfeeding as identified in Lee’s research in the two to three months after birth were more significant, the higher a mother’s level of education and whether she gave birth by natural delivery. These findings of Lee’s on education and delivery are compatible with our findings but the duration of breastfeeding is not. It is considered that the higher the mother’s education level, the higher her realization will be of the benefits of breastfeeding. As regards natural delivery, a rapid postpartum recovery and a short stay in hospital are conducive to breastfeeding consistently occurring during this period. Our findings also substantiate Lee’s et al. findings that attendance at education about breastfeeding is a factor that affects breastfeeding at the one-month and six-month stages after birth.

In other countries, the initiation and length of breastfeeding has a strong relationship with mother’s educational level. A low education level was an important predictor of discontinuing breastfeeding at 12 weeks in women from California (OR, 1.24; CI95: 1.04-1.48). When a mother has primary school education level in Russia, that independent factor affects on an increased risk of discontinuation of breastfeeding (OR, 1.68; CI95: 1.06-2.66). Dubois and Girard showed that the mother’s educational level is more important than her socioeconomic status. Mothers who finished secondary school provided breastfeeding according to the guidelines more than those who with lower educational level. Heck et al. also reported the strong effect of maternal education on breastfeeding in the United States. Educational program should be implemented for mothers with low educational level by taking advantage of the interest in and attendance at prenatal checkups and to make use of the resources assigned for its promotion. Further study on the role of educational

Figure 1. Breastfeeding status for 4-years.
can expect less social expenses such as health expenses, hospitalizations and absenteeism by properly implemented breastfeeding. Families also can save money as they don’t need to buy commercial substitutes for their babies.

But there are other concerns about extensive breastfeeding suggested by the WHO. First, there are not enough evidences which can prove six-month exclusive breastfeeding for infants can be confidently recommended in developed countries. Breast milk may not have sufficient energy requirements for the infants at six months of age. Second, the estimated pro-portions of infants who are exclusively fed on breast milk and suffer from specific nutritional deficiencies is not available. Last, we cannot find enough evidence to recommend the introduction of solids in formula-fed infants.

More importantly, promotions implemented by infant formula companies tend to affect negatively on breast feeding practices. A comparative research with Latin American countries revealed a contrast caused by the low registration rates. In Brazil mothers showed 17.8% of exclusive breastfeeding prevalence at the fourth month and 24.6% at the sixth month. In Mexico, mothers in urban areas showed 48% of exclusive breastfeeding at the third month while those in rural areas showed 14% at fourth month. In Chile, mothers with higher median age and higher educational background more than eight years tend to continue exclusive breastfeeding. We can see risk decreased when the mothers have educational background higher than eight years. These results are similar to those of the researches done in Korea.

Finally, these results are significant as the size of the research sample is large covering the target population of a community health center where they acquired help from this public sector service. In considering the results of our research certain initiatives like schematic education on the practices of breastfeeding need to be set in motion. Consequently, to increase the breastfeeding rate, opportunities for mothers to receive education on breastfeeding should be expanded and a system put in place so as to increase breastfeeding rates among employed mothers.

5. Conclusion

We are sure that alleviation of the factors affecting breastfeeding babies at the one-month stage and the six-month stage after birth can in the long term have enormous effects on both mother’s and child’s health. A key focus of primary health care should be the realization that increased breastfeeding can reduce and prevent many health problems. Therefore programs that deliver correct knowledge via various educational relating to breastfeeding conducted within several fields of community welfare needs to be initiated. To enhance breastfeeding rates for working mothers an environment supporting breastfeeding at work needs to be adopted. A program to activate education in a program on breastfeeding at community health centers and a strategy to increase primipara breastfeeding rates also needs initiation.

6. References

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