# Affecting Variables Breastfeeding in Indonesian Urban Areas: 2017 IDHS Data Analysis

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Keywords:     Breast Milk, Breastfeeding, Urban, Binary Logistic Regression.

Abstract:     Breast milk is an important source of nutrients for child growth and development. The data of BPS 201, achievement of breastfeeding in urban areas of Indonesia (81.72 percent) is more critical than rural areas (73.82 percent). This is exacerbated by the infant mortality rate (IMR) in urban areas which is higher than in rural areas. Therefore, in this study, we examine the variables that affect breastfeeding in Indonesian urban areas using the 2017 IDHS data using the binary logistic regression method. The variables studied included mother's education, mother's working status, birth attendant, place of delivery, early initiation of breastfeeding, pregnancy visits, and household economic status. The data showed that 94.7 percent of mothers gave breast milk and 5.3 percent of mothers did not breastfeed their children. The result showed that several variables that had a significant effect on breastfeeding for children under two years of age were the mother's working status, pregnancy visits, and early initiation of breastfeeding. Mothers tend to breastfeed is the mother who does not work, carry out the IMD and women who undergo pregnancy visit of more than equal to four times.

## 1  INTRODUCTION

According to Law Number 35 of 2014, a child is someone who is not yet 18 years old, including children who are still in the womb. Children are an asset for a nation in the future. For this reason, the government through Law Number 36 Year 2009 states that efforts to maintain infant and child health must be aimed at preparing future generations who are healthy, intelligent, and qualified and to reduce infant and child mortality. In order to maintain the health of infants and children, it is important to meet the nutritional intake for children.

Breast milk is the main source of nutrition for children. Breast milk contains white blood cells, immunoglobulins, enzymes, hormones, specific proteins, and other nutrients needed for the growth and development of children (Law Number 3, 2010). Breastfeeding is recommended for the first six months without complementary foods. Then breastfeeding is continued until the child is two years old.

Based on the *2030 Sustainable Development Goals* (SDGs), there are several goals that are closely related to breastfeeding. This goal is contained in the second goal of ending hunger and the third goal of good health and well-being. This goal can be achieved by ending all forms of malnutrition and reducing neonatal mortality. Every year, there are more than 25,000 babies in Indonesia and 1.3 million babies in the world can be saved from death by breastfeeding.
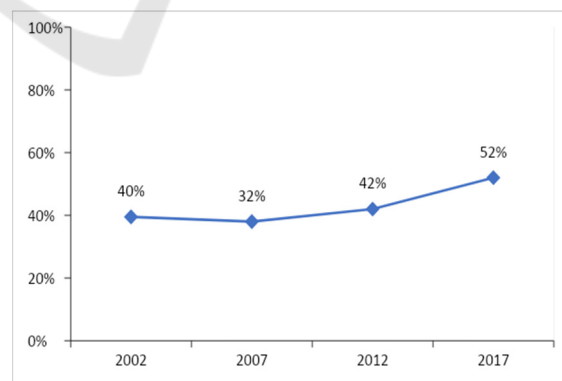


Source: IDHS 2002-2017

Figure 1. Percentage of coverage of exclusive breastfeeding in Indonesia in 2002-2017.

Figure 1 shows that the coverage of exclusive breastfeeding from 2002 to 2017 has fluctuated. The coverage of exclusive breastfeeding in Indonesia has

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not met the target set by the government, which is 80 percent. Meanwhile, the percentage of children aged 0-23 months who were still breastfed in 2017 was 77.4 percent. This figure has decreased from 2016 of 78.49 percent. The practice of breastfeeding that has not met the target will cause problems in achieving optimal growth and development as well as malnutrition in children. Septikasari (2018) states that the success of exclusive breastfeeding has an influence on the incidence of malnutrition in children aged 6-12 months.

Based on 2017 BPS data, the achievement of exclusive breastfeeding in urban areas in Indonesia in 2017 was 54.77 percent. Meanwhile, the coverage of exclusive breastfeeding in rural areas of Indonesia in the same year was 57.22 percent. The same condition also occurs in children aged 0-23 months who are still breastfed in rural areas by 81.72 percent. This figure is higher than urban areas with a percentage of 73.82 percent. The condition of breastfeeding in urban areas in Indonesia is more critical than in rural areas. This is also exacerbated by the infant mortality rate (IMR) in urban areas which is higher than in rural areas. IMR in urban areas is 24 deaths per 1000 live births. In rural areas, this figure is lower at 23 deaths per 1000 live births. It is interesting to study further with regard to the characteristics of urban areas that affect breastfeeding.

In order to optimize breastfeeding for children, it is necessary to know what factors are related to a person's behavior related to health. According to Lawrence Green (1980), human behavior related to health is formed through several factors including the following:

1. Predisposing factors which include knowledge, attitudes, beliefs, beliefs, socio-cultural values, and so on,
2. Enabling factors which include the physical environment, available or the unavailability of health facilities or facilities, such as health centers, medicines, sterile tools and so on.
3. The driving factor which includes the attitudes and behavior of health or other staff, which is a reference group for community behavior.

Predisposing factors are factors that become the basis of a person's motivation or intention to do something. Variables that are included in the predisposing factors include education level and work status. Enabling factors are factors that make it possible to perform a behavior or action. Enabling factors in this study used variables of economic status, place of delivery, pregnancy visits and BMI status. While the driving factor is a factor that

strengthens a person's behavior. The driving factor in this study was a delivery assistant variable.

Research conducted by Astuti (2013) concluded that mother's education, mother's occupation, mother's knowledge, mother's attitude, role of officers, media exposure, husband's role, parental role had a significant effect on exclusive breastfeeding. Hasiana (2016) in his research stated that there was a significant effect between the implementation of IMD and the success of exclusive breastfeeding. Rahmawati (2012) concluded that maternal age, employment status, baby birth order and support from health workers had a significant effect on exclusive breastfeeding. In a study conducted by Elsera (2015) it was found that there was an effect between neonatal visits and work with exclusive breastfeeding. In a study conducted by Tampah-Naah and Kumi-Kyereme (2013) stated that there is a relationship between marital status, area and place of delivery with the practice of exclusive breastfeeding.

Based on the description of the problem, this study has the following objectives to examine the description of the characteristics of breastfeeding in urban areas of Indonesia, analyze the variables that have a significant effect on breastfeeding in urban areas of Indonesia, and determine the tendency of each variable that has a significant effect on breastfeeding. in children under two years in urban areas of Indonesia.

# 2 METHODOLOGY

## 2.1 Data Collection Methods

This study used secondary data sourced frommaterials *raw data* 2017 IDHS. Women of childbearing age (15-49 years) living in urban areas who have their last child under two years old are the unit of analysis in this study. The implementation of the 2017 IDHS covers 49,250 households with a total of 1970 census blocks in urban and rural areas.

From the 2017 IDHS data, there are 49,627 WUS respondents from all over Indonesia. For research purposes, respondents who lived in rural areas were excluded, leaving 26,425 WUS respondents. Then another selection was made to select WUS who had the last child under two years of age and clean up the *missing value* on the dependent variable so that there were 3467 WUS respondents left. Of the 3467 respondents who were selected, then re-categorization was carried out.

The dependent variable used in this research is the status of breastfeeding for children under two years

old, namely breastfeeding and not breastfeeding. While the independent variables include: education level, work status, birth attendant, place of delivery, pregnancy visits, early initiation of breastfeeding, and economic status.

## 2.2 Analysis Method

The analytical method used in this research is descriptive analysis and inferential analysis. Descriptive analysis used in the form of graphs and tables to see the general picture of breastfeeding in urban areas. Meanwhile, inferential analysis uses binary logistic regression analysis with the aim of seeing the effect of the independent variable on the dependent variable. The significance level used in this study is 5 percent. The binary logistic regression model used in this study is as follows:

$$\hat{g}(D) = \hat{\beta}_0 + \hat{\beta}_1 D_{11} \qquad (1)$$
$$+ \hat{\beta}_1 D_{12} + \hat{\beta}_1 D_{13}$$
$$+ \hat{\beta}_2 D_2 + \hat{\beta}_3 D_3 + \hat{\beta}_4 D_4$$
$$+ \hat{\beta}_5 D_5 + \hat{\beta}_6 D_6 + \hat{\beta}_7 D_{71}$$
$$+ \hat{\beta}_7 D_{72}$$

Model suitability test was conducted to see if the model used was suitable to explain breastfeeding status. Testing using *Hosmer and Lemeshow Goodness of fit test*.

Simultaneous test was used to see the effect of the independent variables together on the variable of breastfeeding status. Simultaneous test using G.

Partial test is used to determine the significance of each independent variable on the dependent variable. This test is carried out using thetest *Wald*.

The accuracy of the model in classifying the observed values can be obtained from looking at the classification table. The last step is to calculate the odds ratio of each significant independent variable to see the trend of breastfeeding between a category and the reference category.

## 3 RESULT AND DISCUSSION

### 3.1 Descriptive Analysis

Based on the results of the study, it was found that 94.7 percent of mothers living in urban areas with children under two years of age gave breast milk and 5.3 percent did not. This indicates that there are still mothers in urban areas who do not breastfeed their children.
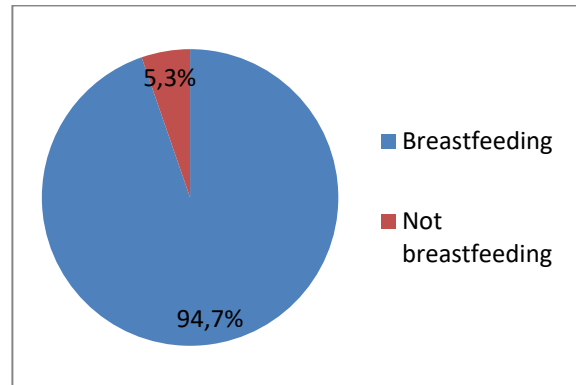


Source: IDHS data (processed)

Figure 2. Percentage of women of childbearing age based on breastfeeding status in urban Indonesia.

Based on table 1. Mothers with junior high-high school education are more dominant than mothers who do not attend school, elementary/equivalent education, and education above high school. The distribution of mothers who do not work is much greater than that of working mothers. The percentage of mothers is dominated by mothers with birth attendants by health workers. Likewise with the characteristics of the mother's place of delivery. The percentage of mothers was dominated by mothers who gave birth in health facilities, which was 93.6 percent. The distribution of mothers was dominated by mothers who had four or more pregnancy visits than mothers with less than four pregnancy visits. The percentage of mothers was dominated by mothers who did early initiation of breastfeeding than mothers who did not do early initiation of breastfeeding. Meanwhile, the percentage of mothers whose economic status is rich is 58.6 percent, middle economic status is 21.6 percent, and the economic status is poor is 19.7 percent. These results indicate that the number of mothers whose economic status is rich is more than that of mothers with middle and poor economic status.

Table 1. Percentage of women of childbearing age in urban Indonesia based on their characteristics.

| Characteristics | Percentage |
|---|---|
| (1) | (2) |
| Mother's education | 100.0 |
|   No school | 0.3 |
|   Elementary school | 14.8 |
|   Middle school | 63.1 |
|   High school | 21.9 |
| Status Working Mother | 100.0 |
|   Working | 39.1 |
|   Not working | 60.9 |
| Birth attendant | 100.0 |
|   Assisted by health workers | 97.4 |
|   Not assisted by health workers | 2.6 |
| Place of delivery | 100.0 |
|   Not in health facilities | 6.4 |
|   At health facilities | 93.6 |
| Pregnancy visit | 100.0 |
|   ≥4 | 93.9 |
|   <4 | 6.1 |
| Early initiation of breastfeeding status | 100.0 |
|   Early initiation of breastfeeding | 65.4 |
|   No early initiation of breastfeeding | 34.6 |
| Economic status | 100.0 |
|   Rich | 58.6 |
|   Middle | 21.6 |
|   Poor | 19.7 |

Source: IDHS 2017 (processed)

## 3.2 Binary Logistics Regression Analysis

### 3.2.1 Model Fit Testmodel Fit

Based on the results of thetest , the table shows the C statistic value of 6.917 with a *p-value* of 0.546. *P-value is* more than = 0.05 so the decision is to accept $H_0$ which means that the model is fit. Thus, it can be concluded that with a 95 percent confidence level the model used is appropriate in explaining the status of breastfeeding in children.

Table 2 The value of thetest statistic Hosmer and Lemeshow.

| Chi-square | df | Sig. |
|---|---|---|
| (1) | (2) | (3) |
| 6.917 | 8 | 0.546 |

Source: IDHS 2017 (processed)

### 3.2.2 Simultaneous Test

Based on the results of the simultaneous test, the G statistic value is 51,742 with a *p-value* of 0.000. As in table 3, it can be seen that the *P*-value <α=0.05 so that

the decision obtained is to reject $H_0$. Thus, the results of the study indicate that there is at least one independent variable that has a significant effect on breastfeeding children in urban Indonesia.

Table 3. Omnibus test of model coefficient.

| Omnibus test | Chi-square | df | Sig. |
|---|---|---|---|
| | (1) | (2) | (3) |
| | 51.742 | 10 | 0.000 |

Source: IDHS 2017 (processed)

### 3.2.3 Partial Test

The next stage is to test the significance of the independent variable partially on the dependent variable. Table 5 shows that the variables of employment status, pregnancy visits and BMI status were significant at the 5 percent level of significance. This means that these variables partially affect breastfeeding for children in urban Indonesia. Based on the results of the partial test, the equation of the binary logistic regression model is obtained as follows:

$$\hat{g}(D) = 0,057 + 1,067D_{11} + 0,964D_{12} \quad (1)$$
$$+ 1,488D_{13} + 0,544D_2$$
$$+ 0,221D_3 + 0,035D_4$$
$$+ 0,916D_5 + 0,645D_6$$
$$+ 0,148D_{71} + 0,169D_{72}$$

There are four variables no significant effect on breastfeeding in children. Mother's education level has no effect on breastfeeding children. Fakhidah and Palupi (2018) state that mothers with basic education are no less advanced than mothers with higher education in accessing information about breastfeeding because they can use electronic media or from health workers. The birth attendant had no significant effect on breastfeeding the child. This result is in line with Paschalia (2017) in her research, which revealed that because birth attendants lacked information about the practice of exclusive breastfeeding, breastfeeding mothers did not understand the benefits and advantages of exclusive breastfeeding. In a study conducted by Sembiring (2018), it was stated that after the delivery process, the mother and baby were separated in different rooms, the mother was in the patient room while the baby was in the baby room so that the mother could not give breast milk to her baby.

The ROC curve is used to obtain the *cut value* which is then used to form a *classification table. Overall percentage* value obtained by 83.1 percent. This means that the model obtained as a whole is able

to predict the breastfeeding status of children well by 83.1 percent. In addition, the model can classify 36.1 percent of mothers who do not give breast milk properly and 85.6 percent of mothers who give breast milk appropriately. *The classification table is* used as a support for thetest *Goodness of fit*.

Comparison the value of the breastfeeding variable for each change in the value or category of the independent variable is seen using the *odds ratio*. The trend ratio is calculated using the exponential value of the regression coefficient.

1. Working

Status Mother's working status has a significant effect on breastfeeding children. Mothers who do not work have a positive effect on breastfeeding with a coefficient of 0.544. This means that mothers who do not work have a tendency to give breast milk by 1.723 times compared to mothers who work. This result is in line with research conducted by Rahmawati (2010) which states that mothers who do not work have the opportunity to breastfeed their babies four times compared to working mothers. Working mothers face their own problems in providing breast milk for their children. In short, the period of maternity or maternity leave certainly disrupts breastfeeding efforts.

2. Early Initiation of Breastfeeding Status

Early initiation of breasfeeding status has a significant effect on breastfeeding children. Mothers who do IMD have a positive effect on breastfeeding with a coefficient of 0.645. This means that mothers who do IMD tend to give breast milk to their children by 1.906 times compared to mothers who do not do early initiation of breastfeeding. Babies who are given the opportunity to breastfeed early by putting the baby in skin-to-skin contact for at least one hour, the result is twice as long as breastfeeding (Luluk and Fitria, 20120). This result is also in accordance with the descriptive which describes the percentage of mothers who carry out early initiation of breastfeeding giving more milk than mothers who do not carry out early initiation of breasfeeding.

3. Pregnancy visits

Pregnancy visits have a significant effect on breastfeeding children. Mothers who made pregnancy visits four times or more had a positive effect on breastfeeding with a coefficient of 0.916. This means that mothers with four pregnancy visits or more tend to breastfeed their children by 2,498 compared to mothers with less than four pregnancy visits. These results are in accordance with the research conducted by Ogbo et al. (2019) stated that pregnancy visits have a relationship with breastfeeding. In Chipo (2019) explained that the knowledge and skills gained during pregnancy visits can increase the mother's confidence and intention to breastfeed her child. This result is in accordance with the descriptive which illustrates that the percentage of mothers who visited pregnancy check-ups more than four times more gave breast milk than mothers who checked their pregnancy less than four times.

# 4 CONCLUSIONS AND RECOMMENDATIONS

Based on the results and discussions that have been described, the following conclusions can be drawn:

1. The status of breastfeeding for children under two years old in urban areas in Indonesia has not yet reached 100 percent. Mothers who breastfeed their children the most with the characteristics: high school education, not working, delivery assisted by health workers, giving birth in health facilities, having pregnancy visits four or more times, carrying out early initiation of breastfeeding, and rich economic status.

2. Variables that significantly affect breastfeeding for children under two years old are: working status of the mother, pregnancy visits, and early initiation of breastfeeding.

3. The tendency of mothers who give breast milk to children under two years old are mothers who do not work, make pregnancy visits four or more times, and mothers who carry out early initiation of breastfeeding.

Suggestions that can be given by the author in relation to the results of this study are:

1. For government or private agencies that have female employees in breastfeeding conditions, they are expected to provide adequate facilities for breastfeeding such as providing lactation rooms and so on.

2. The government and all parties can increase educational activities in the form of counseling and socialization about the importance of maternal health during pregnancy so that at the time of delivery they are ready to carry out IMD and provide breast milk.

3. In this study, the variables used only looked at aspects of the mother and household conditions. In future research, it is possible to use variables related to gender equality and variables from the husband's aspect.

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