

Mapping Exclusive Breastfeeding Coverage and Toddler Stunting Prevalence in Indonesia Based on Web Geographic Information System

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Abstract. Stunting is a chronic nutritional problem in most of developing countries for quite a long time, including Indonesia. In 2018, Indonesia had 30.8% of stunting toddlers, 29.6% in 2017 and 27.54% in 2016. The trend over the last 3 years the prevalence of stunting has increased. The purpose of this research is to map the spread of stunting toddlers and exclusive breast milk coverage in Indonesia. This research is a cross sectional study using secondary data sourced from reporting compiled by the Ministry of Health of the Republic of Indonesia in 2018. WebGIS is used to compile mappings of both variables in each province through the official website of BPS. The results of this study show the information presented in WebGis seen most provinces have a prevalence of stunting in black zones (very high) and exclusive breast milk coverage in red zones (very less met than national targets).

Keywords: Stunting, Exclusive breastfeeding, Toddler, WebGIS, Indonesia

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1. Introduction

Stunting is a chronic nutritional problem faced by developing countries for quite a long time, including Indonesia. The factors that cause stunting start from the root of the problem to the direct cause. Long-term lack of food intake is the main cause of stunting. What is meant here is the low quality and quantity of feeding in infants and toddlers.[1][2]

Exclusive breast milk is the provision of nutritional intake only breast milk starting from the newborn until the age of 6 months. But for some reason, babies don't get it. They get early MP-breast milk or formula milk at that age. One of the many impacts that arises from this is toddler stunting. Long-term malnutrition, which starts as a baby, contributes greatly to a toddler's growth in the next phase. Moreover, the exclusive breastfeeding period is part of 1000 first day of life (HPK). [3][4]

In 2018, Indonesia had 30.8% of stunting toddlers, 29.6% in 2017 and 27.54% in 2016. Trend over the last 3 years the prevalence of stunting has increased.[5] Stunting becomes a strategic program to handle both sensitive and specific aspects. The results achieved from this treatment are important to report so that the public can also understand the situation of stunting in Indonesia. Reporting of stunting situations can be done using a geographic information system, as already done in the reporting of nutritional status monitoring results in Sukoharjo. The development of this system can support nutrition status monitoring activities and is expected to increase the success of nutrition improvement programs in toddlers.[6] The purpose of this research is to map the spread of stunting toddlers and exclusive breast milk coverage in Indonesia.

2. Methods

This research is a cross sectional study using secondary data sourced from reporting compiled by the Ministry of Health of the Republic of Indonesia in 2018 and published through the official website of BPS.[7] The data analyzed included the prevalence of stunting toddlers and the percentage of exclusive breastfeeding from 34 provinces in Indonesia. WebGIS is used to compile mappings of both variables in each province. The webGis drafting flow is presented in Figure 1.

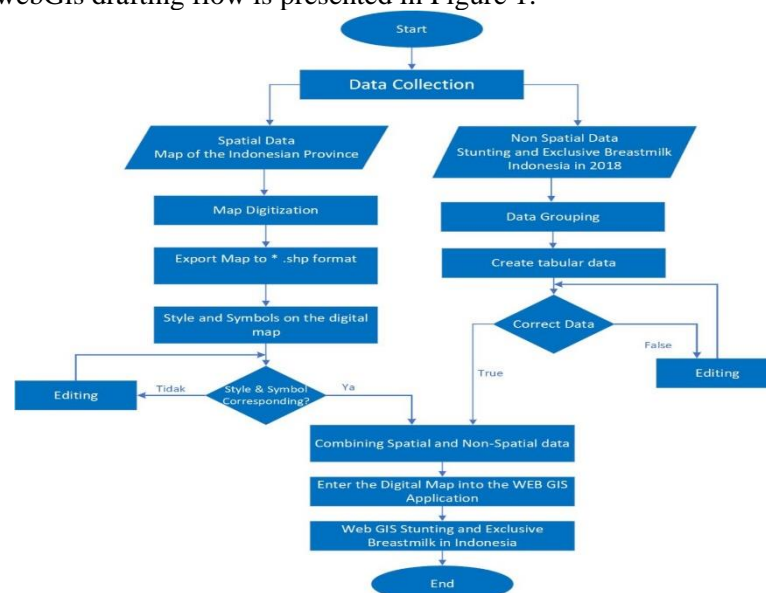


Figure 1. WebGIS Development Guide Flow Chart

Mapping results are arranged in several zones based on the prevalence and percentage of each province (Table 1).

Table 1. Mapping zone

| Zone | Stunting Prevalence | Exclusive breastmilk coverage |
|--------|---------------------|-------------------------------|
| Green | < 10% | ≥ 80% |
| Yellow | 10 – 19,9% | 60 – 80% |
| Red | 20 – 29,9% | <60% |
| Black | ≥ 30% | |

3. Results and Discussion

Stunting toddlers were found in 34 provinces. The prevalence of stunting is categorized as a public health problem if it is "10%. [8] That is, areas with a prevalence above 10% need to make treatment efforts. So far the presentation of data is still in the form of charts or tables, whereas ad other events in the presentation of data so that the reader becomes quick to understand (figure 2).



Figure 2. Mapping Toddlers Stunting in Indonesia.

Most of Indonesia is dominated by black and red zone. This means that the prevalence of stunting in Indonesia is evenly distributed. The data is clarified by table 2 as follows:

Table 2. Stunting Prevalence and Exclusive Breastfeeding Coverage di Indonesia

| Province | Exclusive breastfeeding coverage | Stunting Prevalence | Province | Exclusive breastfeeding coverage | Stunting Prevalence | Province | Exclusive breastfeeding coverage | Stunting Prevalence |
|----------------------|----------------------------------|---------------------|---------------------|----------------------------------|---------------------|-------------------|----------------------------------|---------------------|
| ACEH | 33,33 | 37,1 | JAWA TENGAH | 50,56 | 31,2 | SULAWESI UTARA | 33,62 | 32,3 |
| SUMATERA UTARA | 25,69 | 32,4 | DI YOGYAKARTA | 55,70 | 32,8 | SULAWESI TENGAH | 41,91 | 35,7 |
| SUMATERA BARAT | 50,40 | 29,9 | JAWA TIMUR | 40,79 | 26,6 | SULAWESI SELATAN | 52,18 | 28,7 |
| RIAU | 36,29 | 27,4 | BANTEN | 36,83 | 21,8 | SULAWESI TENGGARA | 34,96 | 32,5 |
| JAMBI | 62,67 | 30,1 | BALI | 27,08 | 33,5 | GORONTALO | 42,19 | 41,6 |
| SUMATERA SELATAN | 41,56 | 31,7 | NUSA TENGGARA BARAT | 64,25 | 42,6 | SULAWESI BARAT | 61,77 | 34,0 |
| BENGKULU | 46,78 | 28,0 | NUSA TENGGARA TIMUR | 62,17 | 33,3 | MALUKU | 36,36 | 31,4 |
| LAMPUNG | 44,58 | 27,3 | KALIMANTAN BARAT | 51,37 | 34,0 | MALUKU UTARA | 64,28 | 27,7 |
| KEP. BANGKA BELITUNG | 34,56 | 23,4 | KALIMANTAN TENGAH | 44,11 | 33,1 | PAPUA BARAT | 35,01 | 33,1 |
| KEP. RIAU | 53,85 | 23,6 | KALIMANTAN SELATAN | 40,69 | 29,2 | PAPUA | 43,48 | 30,8 |
| DKI JAKARTA | 45,66 | 17,6 | KALIMANTAN TIMUR | 59,00 | 26,9 | | | |
| JAWA BARAT | 44,67 | 31,1 | KALIMANTAN UTARA | 46,25 | 25,5 | INDONESIA | 44,36 | 30,8 |

Mapping for exclusive breast milk coverage percentage shown in figure 3.

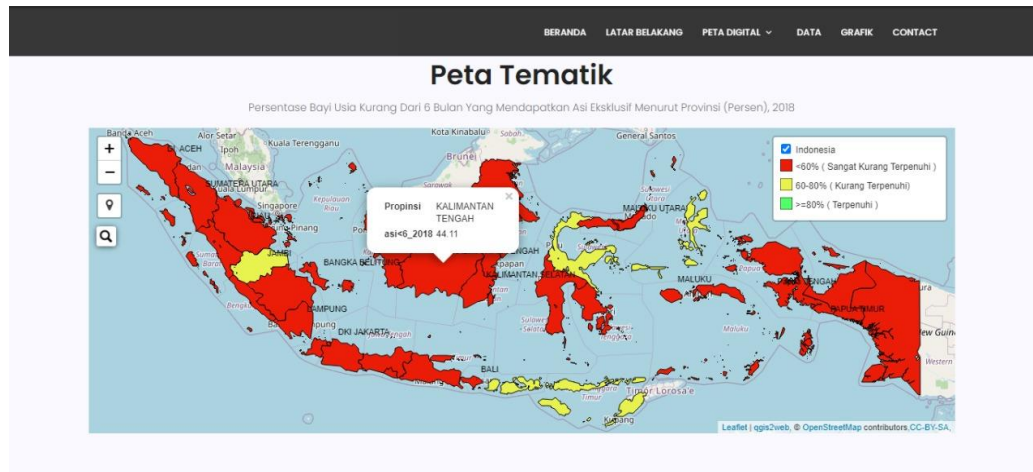


Figure 3. Mapping of Exclusive breastfeeding Percentage in Indonesia 2018.

The national target of exclusive breast milk coverage is 80%. [9] However, the data gathered from Indonesia Health Survey (Riskesdas) 2018, the coverage is below the target of all provinces in Indonesia. Figure 3 shows, there are most regions showing a coverage of <60%. This data is far from a set target.

The province with the highest exclusive breast milk coverage in North Maluku (64.28%), while for the lowest stunting prevalence in DKI Jakarta (17.6%) The province with the lowest breast milk coverage in North Sumatra (25.69%, while for the highest stunting prevalence in East Nusa Tenggara (42.6%). Exclusive breastfeeding and stunting have negative relationships, meaning that higher breastfeeding will suppress stunting in toddlers. However, when figures 2 and 3 are combined, the results are not so. Provinces with the highest exclusive breast milk coverage, the prevalence of stunting is not the lowest.

The high prevalence of stunting, prompted the government to accelerate its handling immediately. Therefore, the government established stunting intervention programs since 2018. The handling includes specific and sensitive efforts that are still ongoing gradually and targeted all provinces get it.[10]

Apart from mapping results that do not show results in line between the prevalence of stunting and exclusive breastfeeding coverage, exclusive breastfeeding is part of a specific effort. Its success involves many parties, especially those closest to the mother and baby. Breast milk is exclusively related to stunting events in toddlers. These results were shown in several studies in several regions. [3] Even in research with the uni direction hypothesis shown a positive r value, meaning that the more fulfillment of the quality and quantity of exclusive breastfeeding in toddlers, the better the nutritional status of the toddler.[11] Even in research in Mamasa shows that babies who don't get exclusive breast milk are at 61 times greater risk of stunting as toddlers. [12] However, some studies have also shown that exclusive breast milk is not related to stunting events in toddlers. [13]

4. Conclusion

The province with the highest exclusive breast milk coverage in North Maluku (64.28%), while for the lowest stunting prevalence in DKI Jakarta (17.6%) The province with the lowest breast milk coverage in North Sumatra (25.69%, while for the highest stunting prevalence in East Nusa Tenggara (42.6%). Most provinces have a prevalence of stunting in black zones (very high) and exclusive breast milk coverage in red zones (very less met than national targets).

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