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THE NEW NORMAL : Creating a Pleasant Virtual Communication

Risk factors of stunting in toddlers aged 24-59 months living in floating houses on the Kahayan River of Palangka Raya City: A case-control study

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Central Kalimantan, one of the provinces in Indonesia, has many tributaries that flow into Kahayan River. The river has a length of 450 m^2 and a width of 100 m^2. Around the river, we can see portraits of the people and their daily activities. Residential housing on Kahayan River is divided into two models, namely *rumah lanting* or floating house (raft house), and *rumah tiang* or pillar houses (Hamidah *at al*., 2014).

Figure 1 Kahayan Bridge Passing Over Kahayan River and A Row of Floating Houses

There were 342 floating houses on the river. The people use the river's water for cooking, washing, drinking, bathing, and defecation. These activities may devastate the environmental quality around the river. Poor quality environmental quality will also impact the public health , especially children.

The prevalence of stunting in toddlers in Central Kalimantan exceeded the national average of 39.0% and in Palangka Raya City, it reached 29.7% (Dinas Kesehatan, 2018). This background suggest it already exceeded the standards of WHO as well (20%). Thus, it must be addressed promptly with proper actions. To solve public health problems, especially stunting, cooperation across sectors and research for spatially analyzing stunting risk factors are required. Community residential condition also warrants attention from the local authorities. To look further into the stunting issue, we studied stunting risk factors that may harm the community on the river.

Figure 2 Activities Around Kahayan River

This observational study used a case control design to find out risk factors of stunting in toddlers living in floating houses on Kahayan River in Palangka Raya. Eighty stunting toddlers aged between 24-59 months were studied. Forty toddlers who lived in floating houses were treated as a case group, and 40 toddlers who lived in Kahayan watersheds became a control group.

Figure 3 Visiting Floating House Residence Approximately for 20-30 Minutes From The Port

Figure 4 Researcher and The Floating Houses

Approximately 98% of the people lived permanently on the houses, and only 12 % lived less than a year.

Figure 5 Floating Houses as Homes For Fish Farmers

Figure 6 Landscape of Floating Houses From The Boat

Figure 7 Floating Toilet on The River

Stunting risk factors examined in this study include child, maternal, and environmental factors. The multivariate regression analysis showed the behavioral factor i.e., garbage disposal to the river was the most influential for causing stunting (OR = 0.210), followed by infectious disease factor such as acute respiratory tract infections which most frequently occurred (OR = 0.190), food intake (OR = 0.163), fruit consumption (OR = 0.029), mother's knowledge of nutrition (OR = 0.026) and education level of father (OR = 0.009).

Figure 8 A Stunting Child with His Mother Who Had Lived For 20 Years in The Floating House

Figure 9 Measuring Toddler's Height on Floating Houses

Figure 10 Researchers Also Measured The Height of Toddler Parents

Toddlers living in floating houses were more likely to be at risk of stunting those living in the watersheds. We calculated the possibility of stunting occurrence (p) with the following formula:

$$p = \frac{\mathbf{Exp}\,(5.496 + [(-1.562\ \mathrm{GD}) + (-1.663\ \mathrm{ID}) + (-1.817\ \mathrm{FI}) + (-3.525\ \mathrm{FC}) + (-3.638\ \mathrm{MK}) + (-4.682\ \mathrm{FE})]}{1 + \mathbf{Exp}\,(5.496 + [(-1.562\ \mathrm{GD}) + (-1.663\ \mathrm{ID}) + (-1.817\ \mathrm{FI}) + (-3.525\ \mathrm{FC}) + (-3.638\ \mathrm{MK}) + (-4.682\ \mathrm{FE})]}$$

GD = garbage disposal into the river, ID = infectious disease factor, FI = Food intake, FC = fruit consumption, MK = Mother's knowledge about nutrition, FE = level education of father

This model that shows stunting risk factors aligns with the models created by UNICEF and UN and specifically portrays stunting prevalence on Kahayan River.

Figure 11 Research Data Collection by Enumerators

Figure 12 Habit of Dumping Garbage Into Rivers

Local government, especially the Palangkaraya District Health Office is able to use results of this study for better policy and intervention planning to improve the nutritional status of the community around Kahayan River. Besides, our research gives implications for tourist area development around the river.

Consent

Participants of the research have given their consent for use of their photographs as needed in this study. All of the photographs belong to the researchers under this study.

Conflict of Interest

None.

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