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Challenges and Assets for Promoting Early Childhood Development in Indonesia: A Health Statistics Review from a Community Health Perspective

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Abstract: Background: Although early childhood development is important, there are limited health statistics reviews related to the early childhood development in Indonesia. This study organized statistical health information across 33 Indonesian provinces to assess ongoing challenges and existing assets for improving early childhood development. Information about early childhood development in Indonesia between 2007 and 2013 was obtained through data supplied by the Indonesian Ministry of Health and the Indonesian Central Bureau of Statistics. Methods: The information collected was organized into five domains of early childhood development: health, nutrition, responsive caregiving, early learning, and security and safety. Challenges and assets in Indonesia were assessed in terms of early childhood development. Results: Our results indicated that although the child mortality rate decreased between 2007 and 2013, it remained higher than the global average, with large disparities between provinces. Background factors influencing child mortality rates included the limited availability of health services, large catchment areas for *puskesmas* (community health centers), parents' limited caregiving responsiveness, and limited opportunities for parents to achieve advanced education. However, our results also revealed several important assets, including the existence of community health posts, alert village programs, community volunteers, and a large number of nurses and midwives; Conclusions: To improve early childhood development in Indonesia, it is important to empower parents to utilize these community health-related assets. Nurses and *kaders* (community health volunteers) should promote parents' enhanced awareness of child health and development.

Keywords: child development; child health; community health nursing; health promotion; Indonesia

1. Introduction

Child health is an ongoing global health and development priority and was highlighted as a target of Goal 3 of the UN Sustainable Development Goals (SDG). SDG indicator 3.2.1. aims to reduce the under-five mortality rate to 25 per 1,000 live births or lower by 2030 (United Nations Statistics Division, n.d.). However, there are regional variations internationally and domestically, and child health remains a significant problem, particularly in low- and middle-income countries. According to the World Health

Organization, Africa (81.3/1,000 live births), the Eastern Mediterranean region (52.0/1,000), and Southeast Asia (42.5) have relatively high under-five mortality rates, whereas the Americas (14.7), the Western Pacific (13.5), and Europe (11.3) have lower child mortality rates (World Health Organization, 2017b). This study focuses on Indonesia, a middle-income country in Southeast Asia with a relatively high under-five mortality rate (27.2) (World Health Organization, 2017b), which is the fifth highest among the 10 Association of Southeast Asian Nations member states (United Nations Children's Fund, 2017). Indonesia faces challenges to improving child health due to widening inequalities between provinces (Hodge, Firth, Marthias, & Jimenez-Soto, 2014).

Health, nutrition, and learning are critically important during early childhood due to their implications for adult health status (Adair et al., 2013; Victora et al., 2008; World Health Organization, 2017a). The nurturing care provided by parents, families, and other community members is important for improving children's health and development (Britto et al., 2017; Winston & Chicot, 2016). Early childhood development (ECD) is particularly important for acquiring fundamental physical, emotional, and social skills (Irwin, Siddiqi, & Hertzman, 2007). The acquisition of these skills is influenced by the five domains of nurturing care: health, nutrition, responsive caregiving, early learning, and security and safety (Black et al., 2017).

Several studies have identified common factors that prevent the equitable distribution of child health, growth, and development in Indonesia, which were subsequently summarized in a systematic review. These factors included the insufficiency of the rural healthcare system, parents' low health literacy, and mothers' limited decision-making power (Schröders, Wall, Kusnanto, & Ng, 2015). Other studies pointed to the limited utilization and availability of health posts (Andriani, Liao, & Kuo, 2016; Sahanggamu, Purnomosari, & Dillon, 2017). However, there is limited information available on the health aspects of childcare (Boothby & Stark, 2011), and no study to date has organized statistical health information related to the five ECD domains for Indonesia's 33 provinces. It is also important to focus on assets to identify solutions for improving suboptimal ECD in resource-limited settings in low- and middle-income countries.

This study organized ECD-related statistical health information across 33 Indonesian provinces. The data were used to assess the ongoing challenges facing current child healthcare provision from a community health perspective, alongside the existing assets available to improve ECD in Indonesia.

2. Methods

Statistical health information related to ECD from 33 provinces in Indonesia was obtained online from the Indonesia Demographic and Health Survey (2007 and 2012) (Indonesian Central Bureau of Statistics, 2008, 2013), the Indonesia Health Profile (2007, 2010, and 2013) conducted by the Indonesian Ministry of Health (Indonesian Ministry of Health, 2008b, 2011, 2014a), the Basic Health Research Survey (2007, 2010, and 2013) conducted by the Indonesian Ministry of Health (Indonesian Ministry of Health, 2008a, 2010a, 2013), and the Indonesian Central Bureau of Statistics (Indonesian Central Bureau of Statistics, n.d.-a, n.d.-b). The mean, minimum, and maximum values were calculated using Microsoft Excel 2016 (Microsoft, Redmond, WA, USA). Additional information on background indicators for child healthcare systems was obtained online from the Indonesian Ministry of Health (Indonesian Ministry of Health, 2004, 2010b, 2014b, 2015, 2016, 2017), the World Health Organization Country Office for Indonesia (World Health Organization Country Office for Indonesia, n.d.), the World Health Organization (World Health Organization, 2017b), and other official organizations (Federal Ministry for Economic Cooperation and Development, 2011). The health statistics and other information collected were then organized into the five domains of nurturing care necessary for ECD: health, nutrition, responsive caregiving, early learning, and security and safety. Challenges and assets for promoting ECD in Indonesia were discussed with reference to the findings.

3. Results

The health statistics and information collected and organized into the five ECD domains in Indonesia are described below in detail. Key indicators are presented in Table 1.

3.1. Health

The Indonesian Ministry of Health's Strategic Plan (2015–2019) emphasizes the importance of improving health and nutrition through community empowerment (Indonesian Ministry of Health, 2015). Although some child health indicators have improved, our results revealed that disparities between provinces remain. The mean under-five mortality rate decreased from 57.2 (per 1,000 live births) in 2007 to 50.8 in 2012 (Indonesian Central Bureau of Statistics, 2008, 2013), but the difference between provinces ranged from 28.0 (Riau) to 115.0 (Papua).

Primary healthcare services are provided according to regulations governing minimum health service standards set by the Indonesian Ministry of Health (Indonesian Ministry of Health, 2016). Local governments provide primary healthcare services for every member of the population, including newborn babies, infants, and children. These services include delivery services by a midwife or a doctor; neonatal home visits; and complete basic immunization by a midwife, nurse, or doctor (Indonesian Ministry of Health, 2016). Although the indicators improved from 2007 to 2013, not all children were receiving important health services, such as a birth attended by health workers (88.8%), neonatal home visits (84.1%), and complete immunization (55.5%) in 2013 (Indonesian Ministry of Health, 2013, 2014a). Moreover, these inadequacies also differed across provinces.

Primary healthcare services are provided at *puskesmas* (community health centers). The catchment population and area per *puskesmas* differs across provinces. The mean catchment population decreased from 22,429 in 2007 to 21,360 in 2013, ranging from 5,921 (West Papua) to 50,100 (Banten) in 2013, and the catchment area ranged from 2 km² (Jakarta) to 921 km² (East Kalimantan) in 2013 (Indonesian Ministry of Health, 2008b, 2011, 2014a). In addition to *puskesmas*, there are community-based health posts, called *posyandu*, where child growth and development are monitored by nurses, midwives, or *kaders* (community health volunteers). The mean catchment household number per *posyandu* in 2013 was 245 households, ranging from 125 (East Nusa Tenggara) to 606 (Jakarta) (Indonesian Central Bureau of Statistics, n.d.-b; Indonesian Ministry of Health, 2014a).

Although the number of health workers per 100,000 people in the population increased from 2010 to 2013 (Indonesian Ministry of Health, 2011, 2014a), the increase was not evenly distributed. For example, the mean number of nurses per 100,000 people in 2013 was 166.2, ranging from 65.7 (North Sumatra) to 320.1 (West Papua). Nurses and midwives constituted the greatest proportion of health professionals. In addition to health professionals, *kaders* provide support for child healthcare in each village (Indonesian Ministry of Health, 2014b).

3.2. Nutrition

The proportion of children with low birth weight decreased slightly from 12.6% in 2007 to 10.7% in 2013 (Indonesian Ministry of Health, 2008b, 2014a). The proportion of children with stunted growth remained high, increasing from 37.7% in 2007 to 38.2% in 2013 (Indonesian Ministry of Health, 2008b, 2014a), and has not yet reached the 2019 target (28%) set by the Indonesian Ministry of Health (Indonesian Ministry of Health, 2015). Meanwhile, some children (11.1% in 2013) are overweight (Indonesian Ministry of Health, 2014a).

3.3. Responsive caregiving

Based on a decree from the Indonesian Ministry of Health in 2004 (Indonesian Ministry of Health, 2004), every mother should be given a maternal and child health book during her first prenatal healthcare visit. The book contains useful information about early childhood development, including child weight and immunization information. However, in 2013, only 29.8% of parents with 0- to 59-month-old children had one of these books in their possession, ranging from 11.3% (West Papua) to 56.1% (Yogyakarta) (Indonesian Ministry of Health, 2013).

Table 1. Health statistics for early childhood development across 33 provinces in Indonesia.

	2007					2010					2013				
	Mean	Min	Province [‡]	Max	Province [‡]	Mean	Min	Province [‡]	Max	Province [‡]	Mean	Min	Province [‡]	Max	Province [‡]
Health															
Neonatal mortality rate (/1,000 births) [†]	23.3	13.0	C. Kalimantan	46.0	W. Sulawesi	-	-	-	-	-	22.3	12.0	E. Kalimantan	37.0	N. Maluku
Infant mortality rate (/1,000 births) [†]	42.8	19.0	Yogyakarta	74.0	W. Sulawesi	-	-	-	-	-	38.9	21.0	E. Kalimantan	74.0	W. Papua
Under-5 child mortality (/1,000 births) [†]	57.2	22.0	Yogyakarta	96.0	W. Sulawesi	-	-	-	-	-	50.8	28.0	Riau	115.0	Papua
Births attended by health worker (%)	74.0	33.7	W. Papua	95.1	Bali	80.6	25.2	Papua	98.8	Bali	88.8	33.3	Papua	99.9	C. Java
Complete neonatal home visit (%)	73.4	24.7	Papua	97.6	Bali	71.5	25.1	S. Sulawesi	98.1	Bali	84.1	25.4	Papua	95.4	C. Java
Complete immunization (age 12–23 months, %)	46.7	17.3	W. Sulawesi	73.9	Bali	51.8	28.2	Papua	91.1	Yogyakarta	55.5	29.2	Papua	83.1	Yogyakarta
Population (/puskesmas)	22429.4	8193.5	Papua	52352.2	Banten	21514.2	7173.8	W. Papua	48996.2	Banten	21359.9	5921.1	W. Papua	50100.1	Banten
Area (km ² , /puskesmas)	323.7	1.9	Jakarta	1296.9	Papua	275.6	1.9	Jakarta	1074.2	Papua	244.3	2.0	Jakarta	921.3	E. Kalimantan
Household (/posyandu)	237.6	33.6	W. Sulawesi	751.5	Riau Islands	245.8	150.6	W. Papua	601.2	Jakarta	245.4	125.2	E. NT	606.2	Jakarta
Doctor (/100,000 people)	-	-	-	-	-	18.6	6.0	Banten	61.5	Jakarta	35.4	18.7	Lampung	86.6	Jakarta
Nurse (/100,000 people)	-	-	-	-	-	108.2	24.7	Banten	262.7	Jakarta	166.2	65.7	N. Sumatera	320.1	W. Papua
Midwife (/100,000 people)	-	-	-	-	-	54.6	19.7	Jakarta	145.0	Aceh	71.7	28.8	Jakarta	204.3	Aceh
Nutrition															
Low birth weight (age ≤5 years, %)	12.6	5.8	Bali	27.0	Papua	12.5	6.0	W. Sumatera	19.2	E. NT	10.7	7.2	N. Sumatera	16.8	C. Sulawesi
Stunting children (age ≤5 years, %)	37.7	26.1	Riau Islands	46.7	E. NT	35.5	22.5	Yogyakarta	58.4	E. NT	38.2	26.3	Riau Islands	51.7	E. NT
Wasting children (age ≤5 years, %)	15.0	9.0	W. Java, Yogyakarta	22.1	Riau	13.5	7.5	BBI	20.0	Jambi	12.6	8.8	Bali	18.7	W. Kalimantan
Overweight (age ≤5 years, %)	12.3	6.8	Gorontalo	20.9	S. Sumatera	12.5	5.0	N. Maluku	19.6	Jakarta	11.1	6.4	Maluku	21.4	Lampung
Responsive caregiving															
MCH book ownership (age 0–59 months, %)	13.3	2.4	N. Sumatera	42.7	Yogyakarta	23.7	6.6	W. Papua	56.7	Yogyakarta	29.8	11.3	W. Papua	56.1	Yogyakarta
Exclusive breastfeeding (age 0–5 months, %)	-	-	-	-	-	62.2	48.8	E. Java	78.3	W. NT	56.6	25.2	Maluku	79.7	W. NT
Weighing frequency ≥4 times during 6 months (age 6–59 months, %)	44.5	21.4	N. Sumatera	78.5	Yogyakarta	41.2	21.2	Jambi	86.8	Yogyakarta	-	-	-	-	-
Smoking (age ≥10 years, %)	29.0	24.2	S. Kalimantan	34.4	Lampung	-	-	-	-	-	28.5	21.9	Papua	32.7	W. Java
Smoking at home (age ≥10 years, %)	85.5	64.1	Jakarta	93.3	C. Sulawesi	-	-	-	-	-	82.5	50.9	Jakarta	92.4	W. Sulawesi
Early learning															
Primary school net enrollment (%)	92.9	80.9	Papua	95.8	Aceh	94.0	76.2	Papua	97.3	Aceh	94.7	72.6	Papua	98.8	Yogyakarta
Junior high school net enrollment (%)	64.1	48.7	Papua	76.4	Aceh	65.3	49.6	Papua	78.6	Aceh	70.7	45.8	Papua	83.3	Riau Islands
High school net enrollment (%)	45.7	33.3	W. Sulawesi	62.0	Aceh	46.6	34.0	W. Sulawesi	62.4	Aceh	55.2	36.7	Papua	67.6	Riau Islands
Security and safety															
Villages with active Desa Siaga programs (%)	-	-	-	-	-	-	-	-	-	-	65.8	2.0	W. Papua	100.0	C. Java
Population living below the poverty line (%)	17.6	4.6	Jakarta	40.8	Papua	14.4	3.5	Jakarta	36.8	Papua	12.1	3.6	Jakarta	31.1	Papua

[†] For neonatal, infant, and under-five mortality rates, data from the 2012 Demographic and Health Survey was used for the year 2013.

[‡] Province name abbreviations, C: Central, E: East, N: North, S: South, W: West, BBI: Bangka Belitung Islands, NT: Nusa Tenggara

Although it is recommended a child aged 0–59 months is weighed at least eight times a year (i.e., four times over 6 months) (Indonesian Ministry of Health, 2015), only 41.2% of parents weighed their children four or more times during a 6 month period in 2010, ranging from 21.2% (Jambi) to 86.6% (Yogyakarta) across the provinces (Indonesian Ministry of Health, 2011).

Although there was no information about parents' smoking prevalence, in people aged 10 years and over, smoking prevalence was 28.5% in 2013, and many smokers (82.5%) were reported to smoke at home, ranging from 50.9% (Jakarta) to 92.4% (West Sulawesi) across the provinces (Indonesian Ministry of Health, 2013). Indonesia is reported to have the highest smoking prevalence for men (76.2% in 2015) from 128 countries, whereas that for women is relatively low (3.6% in 2015) (World Health Organization, 2017b).

3.4. Early learning

Our educational attainment findings revealed that although most children entered primary school (94.7%), enrollment rates were relatively low for higher education, although they varied by province. The mean enrollment rate for junior high school was 70.7% in 2013, ranging from 45.8% (Papua) to 83.3% (Riau Islands). The mean rate for high school was 55.2% in 2013, ranging from 36.7% (Papua) to 67.6% (Riau Islands) (Indonesian Central Bureau of Statistics, n.d.-a).

3.5. Security and safety

Indonesia began developing the *Jaminan Kesehatan Nasional*, a national health insurance system, in 2014, which pools contributions from members and the government under a single health insurance agency (World Health Organization Regional Office for South-East Asia, 2017). Enrolled members include contributing beneficiaries and poor non-contributing beneficiaries (World Health Organization Regional Office for South-East Asia, 2017). The progressive expansion of coverage across the entire population is planned for completion by 2019 (World Health Organization Country Office for Indonesia, n.d.). The system offers outpatient and inpatient care at the primary level up to the tertiary level, excluding some care that is either partially covered or not covered (World Health Organization Regional Office for South-East Asia, 2017). However, another study noted that the spending focus is on curative care; thus, the budget allocation for preventive care is relatively low (World Health Organization Regional Office for South-East Asia, 2017). Moreover, health insurance coverage had only reached 66.5% of the population in 2016 (Indonesian Ministry of Health, 2017). *Desa Siaga* (alert village) programs are a community participation strategy in which villages use their own resources to recognize, prevent, and tackle problems to improve their health status, typically focusing on pregnancy and childbirth (Indonesian Ministry of Health, 2010b). This strategy is rooted in the idea that not only women but also all community members such as husbands, neighbors, community and religious leaders, and health professionals, play a role in promoting healthy pregnancies and safe deliveries. Elements of this strategy include notification, blood donation, transportation and communication, and financial support (Federal Ministry for Economic Cooperation and Development, 2011). For example, people who have vehicles assist other people with travel to healthcare facilities. Since 2010, it has been expanded to the *Desa Siaga Aktif* (active alert village) program, which includes village support to provide primary healthcare at health posts (World Health Organization Regional Office for South-East Asia, 2017). The Ministry of Health sets a target for 80% of villages to have *Desa Siaga* programs by 2015 (Indonesian Ministry of Health, 2010b). However, only 65.8% of villages had one in 2013, ranging from 2.0% (West Papua) to 100% (Central Java) across the provinces (Indonesian Ministry of Health, 2014a).

4. Discussion

Overall, our results revealed several challenges for promoting ECD in Indonesia. Although the under-five mortality rate decreased between 2007 and 2012, it was still higher than the global average (42.5/1,000 live births) (World Health Organization, 2017b) and there were disparities between provinces. The limited availability of health services was an important factor, which may be associated with poor access to health facilities due to large catchment areas, limited responsiveness of parents while caregiving (e.g., no possession of the maternal and child health book, low frequency of child weighing, and high smoking prevalence at home), and limited higher-education opportunities for parents. These findings are consistent with previous studies that identified the importance of parents' responsive caregiving. The

prevalence of stunting was negatively associated with weighing frequency at posyandus in rural Indonesia (Sahanggamu et al., 2017). This emphasizes the importance of continuously monitoring child growth in the community. Paternal smoking positively correlates with child malnutrition and mortality (Best et al., 2008; Semba et al., 2008), highlighting the importance of reducing the prevalence of paternal smoking and promoting paternal participation in child healthcare. It is important to improve parents' awareness of child health while also supporting the development of their childcare skills because parents act as the main decision makers when seeking healthcare for their children.

However, we also identified several important assets necessary to improve ECD, including community-based support systems such as community health posts, alert village programs, community volunteers, and larger numbers of nurses and midwives. Our findings underscore the importance of each village implementing a mutual assistance system to make it easier for people to access basic health services for their children.

Furthermore, to improve ECD in Indonesia, it is important to empower parents to utilize existing community health resources. To achieve this goal, nurses and midwives should promote enhanced awareness of child health and development in parents and the general population. Further research is required to better understand how to utilize these community assets to improve child health and development in Indonesia.

The limitation of this health statistics review was the cutoff year of 2013, which did not provide information about the current situation, due to the lack of availability of more recent statistics. Further research is needed to monitor and evaluate the ECD situation in Indonesia.

5. Conclusions

This study organized statistical health information across 33 Indonesian provinces to assess the ongoing challenges and existing assets for improving ECD. Our results indicated several challenges, including limited availability of health services, large catchment areas for puskesmas, parents' limited caregiving responsiveness, and limited opportunities for parents to achieve advanced education. Our results also revealed several important assets, including the existence of community health posts, alert village programs, community volunteers, and a large number of nurses and midwives.

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