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Stunting as a Health Problem in Developing Countries: A Systematic Literature Review

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A B S T R A C T

Stunting, or stunted growth in children, is a serious public health problem in developing countries. The risk factors that contribute to the prevalence of stunting in these countries are complex and multifactorial. In an effort to understand this problem, this study aimed to present a number of risk factors associated with stunting in children in developing countries. Preparing this literature review begins with searching journals, articles, and scientific works through a search engine like Google Scholar and PubMed using the keywords "stunting", "stunting prevalence", "stunting risk factors", "stunting prevention", and "developing countries". The prevalence of stunting cases is still quite high in developing countries. Risk factors for children and mothers play a significant role in the incidence of stunting in children in developing countries. The factors of birth weight, child's age, gender, mother's education level, and family welfare act as the main factors in initiating stunting.

1. Introduction

Maternal and child health is one indicator in assessing the health system in a country. Millenium development goals (MDG) has set a target to reduce the mortality rate of mothers and children under 5 years of age in the third quarter of 2015. In order to continue the goal of improving the health status of mothers and children, which was not completed in the MDG era, sustainable development goals (SDG)-3 sets an ambitious target of reducing global maternal mortality to less than 70 deaths per 100,000 live births and reducing the number of preventable deaths in mothers and children under 5 years of age by 2030. Most causes of death in children under 5 years of age are caused by malnutrition. This is associated with an increase in various risks that can cause death in children, such as increased susceptibility to infection, increased frequency and severity of infectious diseases (recurrent infections), and slow recovery. Apart from that, poor nutrition in the first 1000 days of a child's life can also cause stunted growth, which reduces cognitive abilities.[1-3]

World Health Organization (WHO) proposed 11 indicators in the context of monitoring maternal and child health, including maternal mortality, prevalence of stunting, exclusive breastfeeding in the first 6 months after birth, and skilled birth attendants. Among these indicators as a whole, stunting during

childhood is an indicator that provides an accurate picture of the welfare and equality of children. The global prevalence of stunting cases is still quite high, even though there has been a decline in the prevalence of stunting since 2000. Joint malnutrition estimates by the 2023 edition of UNICEF – WHO – World Bank Group show that 1 in 5 (148.1 million) children under 5 years old are stunted. by 2022, and at least 45 million children experience wasting at some point in the year.[4-6]

In 2019, joint malnutrition estimates data revealed that in low-income countries, there were 39.7 million children under five who were stunted. In lower-middle-income countries, the highest number of children experiencing stunting is 93.2 million children under five, while in upper-middle-income countries, it is 11 million children under five. The lowest number of children under five who experience stunting is in high-income countries, namely 1.9 million children under five.[10,11] This study aimed to determine the factors that cause stunting and various prevention efforts have been carried out in various countries, especially in developing countries where the prevalence of stunting is still quite high.

2. Methods

Preparing this literature review begins with searching journals, articles, and scientific works through a search engines like Google Scholar and PubMed using the keywords "stunting", "stunting prevalence", "stunting risk factors", "stunting prevention", and "developing countries". Inclusion criteria in this literature review include all studies on stunting in developing countries, which are the largest contributors to stunting prevalence globally. The age limit for children in the study starts from 0 - 59 months. Articles relevant to the theme explain risk factors and prevention efforts, as well as efforts that have been made to reduce the prevalence of stunting. This study includes all types of research, be it case-control studies, cross-sectional studies, cohorts, surveys, secondary data analysis, and also articles or systematic reviews that have been analyzed related to stunting in developing countries in the last 5 years.

3. Results and Discussion

From online journal searches, 10 articles were found that discussed stunting in developing countries. Then, grouping was carried out according to the discussion theme, namely, stunting diagnosis (2 journals), stunting risk factors (2 journals), stunting prevalence (2 journals), stunting prevention (2 journals), and stunting treatment (2 journals). Research locations were conducted in developing countries such as Indonesia, Vietnam, Thailand, Malaysia, India, South Africa, Cambodia, Myanmar, the Philippines and Laos. The type of research is a prospective cohort study, cross-sectional, survey, systematic review, and meta-analysis.

Prevalence of stunting in developing countries

The world has experienced positive improvements regarding stunting management over the last 20 years. The United Nations International Children's Emergency Fund (UNICEF) estimates the number of children suffering stunting under the age of five was 149.2 million in 2020, down 26.7% compared to 2000, which reached 203.6 million. However, progress in dealing with stunting is still not evenly distributed throughout the world, especially in low and middle-income countries, including developing countries such as countries in Africa and Southeast Asia, which contribute around 34% of stunting prevalence in the world. Based on the results of studies in 33 countries, the prevalence of stunting in Sub-Saharan Africa is still very high, especially in children aged less than 5 years (41.1%). The highest prevalence is found in East Africa and Central Africa, while the lowest prevalence of stunting is found in South Africa. One of the countries in East Africa that has the highest prevalence is Burundi, with a stunting prevalence of 55%, and the lowest prevalence is Senegal.[7-9]

Apart from countries in Africa, countries in Southeast Asia are also the largest contributors to the prevalence of stunting in the world, this is because most countries in Southeast Asia are developing

countries that have complex problems, including varying economic capabilities. Referring to data released by the Asian Development Bank (2020), the prevalence of stunting in Southeast Asia is as follows:

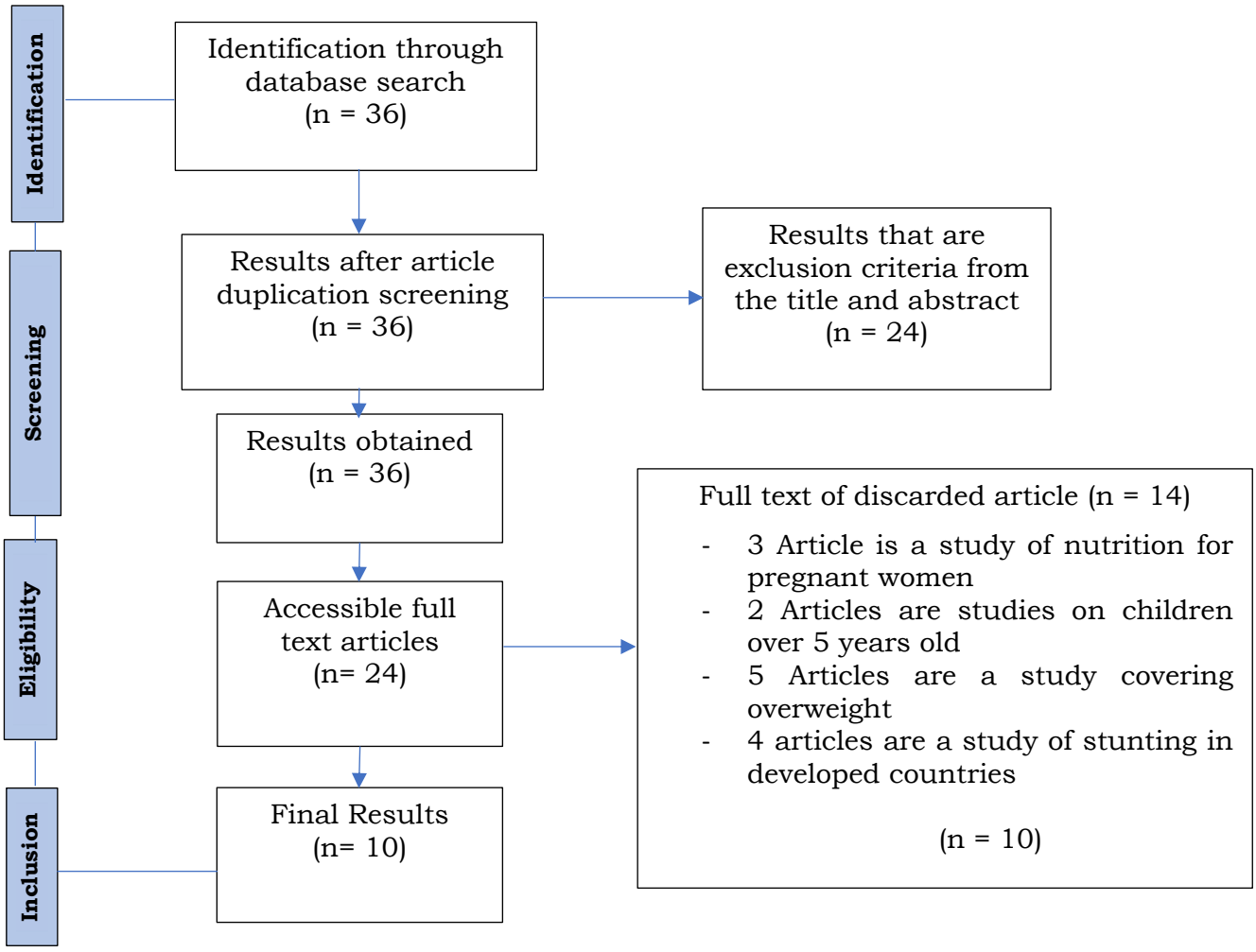

Figure 1. Flow chart journal selection process.

Referring to data released by ADB in 2020, Timor Leste is the first country with a stunting prevalence in 2020 of 48.8%, followed by Indonesia in second place with a prevalence of 31.8% and Laos in third place with a stunting prevalence of 30.2%. Next followed by Cambodia (29.9%), Philippines (28.7%), Myanmar (25.2%), Vietnam (22.3%), Malaysia (20.9%), Thailand (12.3%) and Singapore with the lowest stunting prevalence at 2.8%. This figure shows that the reduction in stunting prevalence occurred in all countries, including in developing countries such as most countries in Africa and Southeast Asia with varying magnitudes.[8-11]

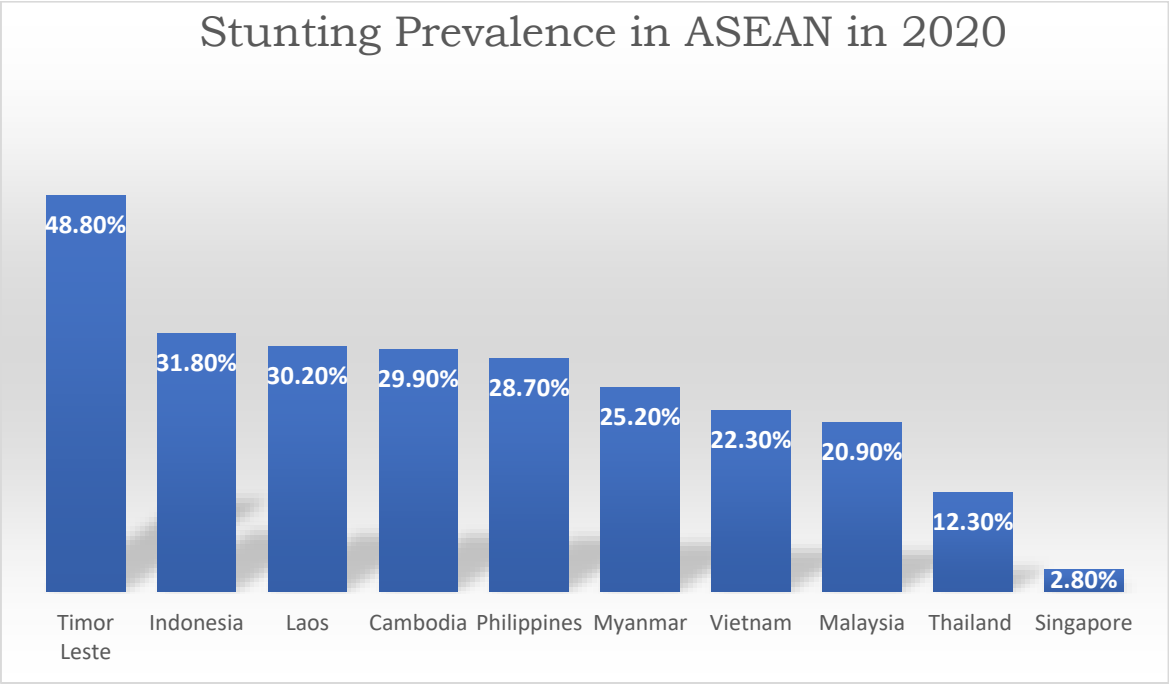

Figure 2. Prevalence of stunting in ASEAN countries in 2020.

Stunting risk factors in developing countries

Stunting is a malnutrition problem that is very crucial for public health, especially for children aged < 5 years, which is caused by various factors. However, the risk factors most often associated with stunting are mainly related to the characteristics of the child, maternal characteristics, maternal education and employment level, socio-economic problems, and environmental factors.[12]

Child characteristics

Age

All studies reviewed show that the age factor is closely related to the incidence of stunting in developing countries. Risk factors for stunting in Sub-Saharan Africa are child characteristics (age and gender), mother characteristics (during pregnancy, after birth, and medical care), mother's education and employment, as well as family (household) empowerment and welfare. Children aged 0 - 59 months are a group that is vulnerable to stunting, especially children aged 6 months and over, and the greater the risk of experiencing stunting at the age of 1 year and over. This is in line with other research, which states that the highest risk of experiencing stunting in Kenya is in children aged 36-47 months, and those aged 24 - 39 months are the group most likely to experience stunting in Ethiopia. So we get an idea that the highest age group experiencing stunting in Sub-Saharan Africa is in the 1 to 4-year age group.[13]

Gender

8 studies from 10 journals reviewed found that boys have a greater risk of becoming stunted than girls. The prevalence of stunting among boys in Myanmar is higher than among girls. Likewise, other research conducted a cross-sectional design study on demographic data and health surveys in Cambodia, where the prevalence of stunting in boys was greater when compared to girls (52% : 48%).[14]

Birth weight

The baby's weight at birth also influences the risk of stunting. Babies born with average/normal weight tend to have a lower risk of stunting. LBW (low birth weight) has a close relationship with the incidence of

stunting after adjusting for confounding factors such as age, gender, education, BMI (body mass index), and ANC (antenatal care), it is stated that babies born with LBW are more at risk of experiencing stunting (19% higher) when compared with babies born with normal weight (AOR=1.19; CI 1.14, 1.24; p<0.001).[15]

Maternal characteristics

Age and BMI

Maternal characteristics such as height and maternal age during pregnancy also contribute to the risk of stunting; mothers with a height < 145cm have twice the risk of having a child with stunting. Research also found a relationship between maternal body mass index, including height, and the incidence of stunting in Cambodia. The same thing was found in Myanmar, where maternal characteristics such as poor nutritional status during pregnancy when assessed from body weight and height (BMI before and during pregnancy) were the biggest factors causing intrauterine growth restriction (IUGR).[16]

Mother's education and occupation level

All the studies reviewed state that the level of education and knowledge, as well as the mother's occupation, have a very close relationship to the incidence of stunting. This factor is found to be the same in almost all developing countries, including in Sub-Saharan Africa and Southeast Asia. The mother's education and employment level have a huge influence on the mother's decision-making regarding the health condition of the mother and her child. Children born to mothers with an education level of up to elementary school or less have a greater risk of having stunted children. This is related to the mother's knowledge about nutrition before pregnancy, during pregnancy, after the baby is born, and the decisions taken in caring for the baby, such as breastfeeding, immunization, and when the nutritional needs of babies and toddlers are as well as the tendency of working mothers to entrust their toddlers to caregivers or another family.[17]

Family welfare level

The family welfare factor is the focus of the government's attention in developing strategies to reduce the prevalence of stunting in the country. All research shows that economic factors are a big risk factor for stunting. Another study links the family's economic level in feeding behavior and children's nutritional intake in Malaysia, while another study links economic status to extended breastfeeding behavior in Cambodia, which has a negative effect on children's nutritional status. The same thing was also stated by other studies that linked economic status and breastfeeding that extend beyond age, which should have a negative impact on children's growth. Socioeconomic factors also influence the mother's ability to access health services, fulfill nutritional needs before, during, and after birth, as well as access to clean water and sanitation. Other studies also reveal that improving family welfare reduces the risk of stunting.[18-20]

4. Conclusion

The prevalence of stunting cases is still quite high in developing countries. Risk factors for children and mothers play a significant role in the incidence of stunting in children in developing countries. Birth weight, child's age, gender, mother's education level, and family welfare act as the main factors in initiating stunting.

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