JPH RECODE October 2023; 7 (1): 72-80
http://e-journal.unair.ac.id/JPHRECODE
http://dx.doi.org/10.20473/jphrecode.v7i1.28877

STUNTING IS NOT GENDER-NEUTRAL: A LITERATURE REVIEW

Maulida Rahmawati[1], Nuzulul Kusuma Putri[2]
[1] Health Policy and Administration Department, Faculty of Public Health, Universitas Airlangga, Indonesia
[2] The Airlangga Centre for Health Policy, Indonesia
maulidawork@gmail.com

ARTICLE INFO

Article History:
Received: 03rd, August 2021

Revised:
From 03rd, August 2021

Accepted: 14th, April 2022

Published: 01st, October 2023

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ABSTRACT

Background: Stunting is one of the undernutrition outcomes commonly reported in LMICs. It results from chronic or recurrent undernutrition and is associated with social determinants. Indonesia has promoted various programs to reduce and prevent stunting. The programs tend to not be gender-responsive with no existence of gender analysis on the programs. **Purpose**: To analyze the intersectionality of gender with other social determinants of stunting, transforming into any stunting program barriers within the health system. **Methods**: This narrative review was conducted using original research articles on the Scopus database. Two independent reviewers performed review selection and characterization. We grouped the identified gender intersectionality and constraints imposed on stunting programs based on three-levels of health systems. **Results**: There were 19 papers included in this literature review. Two main messages were identified. First, gender has a different impact on any health program. It interacted with other social determinants in shaping the risk of being stunted. Second, the gender intersectionality will be different for each level of health system. **Conclusion**: Gender intersects with different social determinants in each level of the health system. The impact of gender intersectionality with other stunting determinant stunting is identified. Hence, stunting is not gender neutral.
Keywords: nutritional status, micro, meso, macro, stunting.

Cite this as: Rahmawati, M., & Putri, N. K. (2023). Stunting Is Not Gender-Neutral: A Literature Review. *Journal of Public Health Research and Community Health Development*. 7(1), 72-80. http://dx.doi.org/10.20473/jphrecode.v7i1.28877

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INTRODUCTION

Children with stunting have a high risk of suffering irreversible physical and cognitive damage that could last a lifetime. UNICEF reported that 22 percent of children under 5 years old had stunted growth. Most two out of five children who had stunting lived in South Asia which have the most severe stunting number in the world of 2020. Indonesia is one of the South Asian countries which had been reportedly having a high percentage of stunting children (UNICEF, 2021). According to its National Health Data, at least 30.8% of Indonesian children had stunted growth in 2018 (Riset Kesehatan Dasar, 2018).

Stunting is one of the undernutrition outcomes. It results from chronic or recurrent undernutrition which is commonly associated with several social determinants. Children who were born from an unfavorable socioeconomic family background (Rabbani *et al.*, 2016; Yang *et al.*, 2018) and born from a mother with low education level (Rabbani *et al.*, 2016; Mgongo *et al.*, 2017; Yang *et al.*, 2018) are have higher probability to be stunted. Even though there is no probability difference for girls or boys to be stunted growth (Kumar *et al.*, 2018; Kwami *et al.*, 2019). Most of the stunted child-caregiver are mostly women (Kwami *et al.*, 2019). For those reasons, nutrition intervention programs which gender-sensitive is recommended in resolving undernutrition (Kumar *et al.*, 2018).

There are several interventions to decrease stunting (1) specific nutritional intervention which aims to solve the direct cause of stunting by targeting specific group such as woman and toddler. Specific nutritional intervention is mostly provided by the health sector. (2) nutritional sensitive interventions which aims to solve indirect causes through activities by the non-health sector such as clean water supply, improve access quality of nutrition and health services; raising awareness, commitment, and practice of maternal and child nutrition; and increase access to nutritious food (Dewi et al., 2022).

The differences between this research and the latest research are that there isn't any research yet discussing stunting determinants based on impacts of gender and grouped the determinant of stunting into three levels of the health system framework. The purpose of this research is to explore the possibility of gender intersectionality on health system and type of constraints imposed of stunting problems. Hence, the research questions were investigated: i) what are the impacts of gender on the determinants of stunting? and ii) how do these impacts differ according to the level of health systems?

METHOD

The method that was used for this research was literature review. Among 34 papers that were collected from Scopus database using keyword "gender AND stunting OR stunted OR undernutrition", we reviewed 34 articles. A total of 34 articles were identified through Scopus database searching. After identification, 34 articles were screened with tittle and abstracts. After screening, 34 articles were pulled for full text article assessed for eligibility. After eligibility, 19 articles in all quartiles were included in review and 15 articles in all quartiles excluded based on full text assessment (10 not an original research, 5 articles do not observe under-5child).

The following research questions were investigated by reading all the screened literature. We seek to answer these two questions by reading the article. First, based on the article, what were the impacts of gender on the determinants of stunting? Second, based on the literature, how did these impacts differ according to the level of health systems?

We drew our literature review by using micro-meso-macro level of health system framework. Each level of the health system has non-fixed functions, and it is feasible to vary depending on context. We used this framework in the context of stunting to simplify our understanding of the complex social determinants of stunting and undernutrition. A flow chart of the systematic literature can be seen in Figure 1.

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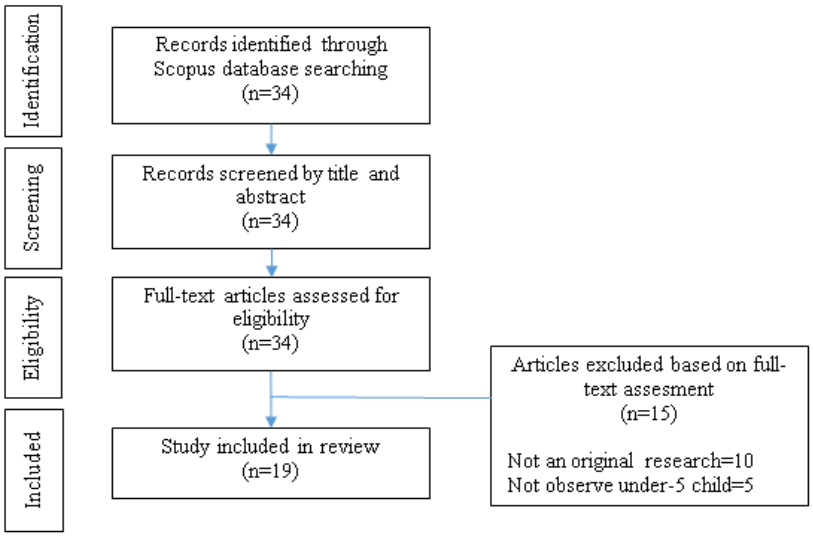

Figure 1. Flow Chart of the Studies Identification and Selection Process

RESULT

Figure 2 depicted our synthesis on the determinants of stunting that we have grouped into micro-meso-macro level of health system framework. Micro level was individual or household problem. Individual problem grouped into 4 categories i.e., caregiver, child, mother, and father. Household problems are also grouped into 4 categories i.e., physical, poverty, household structure, and healthy lifestyle. Meso level was the problem with the healthcare institution and connect to the community. Meso level grouped into 2 categories i.e., nutrition-specific interventions and nutrition-sensitive interventions. Macro level was policy problem i.e., Universal Health Coverage.

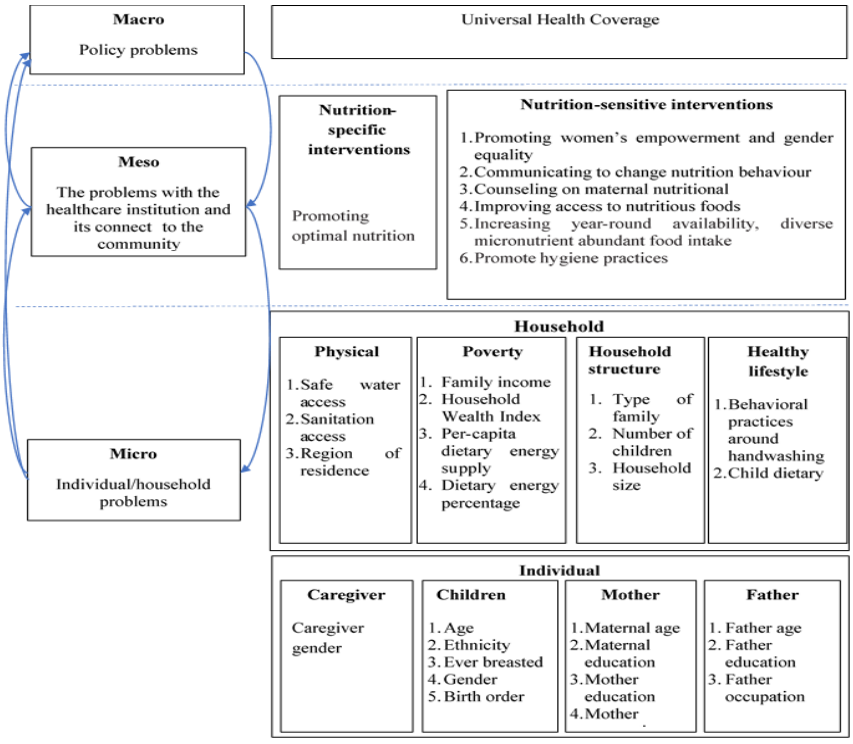

Figure 1. Micro-meso-macro-Level of Health System Framework

Table 1. Literature Review Matrix.

No.	First Author	Outcome	Determinant		
			Micro Individual/household	**Meso Healthcare organization**	**Macro Policy**
1.	Wu (2019)	Stunting	Family income Gender Age Ethnicity Number of children Parents education levels Drinking water Toilet		
2.	Kwami (2019)	Stunting	Gender of caregiver Age Handwashing behavioural practices Water source		
3.	McGovern (2017)	Stunting	Parent wage Economic growth		
4.	Mngongo (2017)	Stunting	Mother education Father age Region of residence		
5.	Yang (2018)	Stunting	Poor-middle income Teen mother Mother without secondary education		
6.	Rabbani (2016)	Stunting	Household Wealth Index (the asset ownership of selected assets) Mother's years of schooling Mother's Chronic Energy Deficiency (CED) Short stature Birth order Child's age Paternal schooling		
7.	Gupta (2017)	Stunting	Income Anemia		
8.	De Araujo (2016)	Stunting	Living in rural Lower household wealth index Living in walking palm house Maternal height ≤146.4 cm Cow's milk introduction history		
9.	Johri (2016)	Stunting	Rural/urban Maternal health literacy		
10.	Nkurunziza *et al.* (2017)	Stunting	Child age Low birth weight Male Having no education for mothers Incorrect mothers' child nutrition status assessment Delivering at home		
11.	Mbwana (2017)	Stunting	Cultivated area Gender of the child Age of the child Breastfeeding period Size of the household Iodized salt used Distance to water supply		
12.	Hashmi *et al.* (2019)	Stunting	Small for gestational age Adjusted for length of gestation Age of the infant Gender of the infant Maternal height		
13.	Mistry (2019)	Stunting		Maternal nutritional counseling by community health worker	
14.	Haselow (2016)	Stunting		Enhanced Homestead Food Production program can increase year-round availability and intake of diverse micronutrient abundant food, promote optimal nutrition, poor household hygiene practice	
15.	Muhoozi (2016)	Undernutrition	Household Education Gender Sanitation Size of the household Maternal age Maternal education Poverty Child dietary		

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Continuation of Table 1. Literature Review Matrix.

No.	First Author	Outcome	Determinant		
			Micro Individual/household	Meso Healthcare organization	Macro Policy
16.	Valente (2016)	Undernutrition	Birth weight Mother nutritional status Mother's education Mother's weight gain		
17.	Nuñez (2016)	Undernutrition			Universal Health Coverage
18.	Ersino (2018)	Underweight	Gender and socio economic demographic structure of the households: Imbalance of power Farm produce control Physiological density Size of the household Pregnancy dietary habits		
19.	Kumar (2018)	Nutritional status		Improving on infant and young child feeding (IYCF) knowledge and practice by: - Improving access to nutritious food - Promote empowerment of the women and gender equality Nutrition behavior change communication	

DISCUSSION

The impacts of gender on the determinant of stunting

Gender as a determinant of stunting appears at several levels of the health system. One of them appears at the individual level. Boy probable to be stunted and severely stunted rather than girl (Rabbani *et al.*, 2016; Wahdah, Juffrie and Huriyati, 2016). A study that conducted in Sukorejo subdistrict found 31 stunting children, 20 children are male and 11 children are female (Mugianti *et al.*, 2018).

Gender as determinant of stunting also appears in caregiver. The caregiver gender has a strong association with stunting. Gender of caregiver 92% are female and 8% are male. Male caregivers affect a lower prevalence of stunting among children than a female caregivers (Kwami *et al.*, 2019).

The current stunting program is not well studied yet whether they are already gender sensitive or specific. Gender sensitive programs aims to enhance women's empowerment (UNICEF South Asia., 2017). A study that conducted in Chemba District found that gender sensitive programs can reduce a woman's time for unpaid labour. The programs such as giving stoves and water harvesting systems can give women more time to take care of their children. So that can reduce the determinant of stunting (World Food Programme, 2020).

While gender specific programs provide girls with decision making that can assist their development into womanhood. Gender specific nutrition program aims to address specific needs of women such as iron and folic acid supplementation program for women or adolescent girl. Women specific nutrition program highlights the gender equity in the nutrition related sector such as education, food security, poverty (UNICEF South Asia., 2017).

Different Level of Health System

Micro level represents interaction between the health systems and individual users or community. Micro-level problems are evidence that the health system must address. Figure 1 explains the micro-level of health systems in the stunting problems happens in all of individual who involved in the childcare, i.e., the parents, the children, and the caregiver.

Gender issues appear at all these individual levels. There is significant different rate of stunting number between boys and girls (Muhoozi *et al.*, 2016; Mbwana *et al.*, 2017; Ersino *et al.*, 2018; Wu, 2019). Unfortunately, these studies do not explain why the child's gender determines their risk of being stunted growth. Intersectionality analysis is always used in the study explaining the risk of each gender.

The characteristics of parents play an important role in determining the undernutrition

and stunting status. Parents' socio-economic status can determine stunting. Children who born from teen mother tend to have a higher risk to be stunted (Mgongo *et al.*, 2017), while father aged 35 years and above mostly associated with a higher probability of stunting (Mgongo *et al.*, 2017). This characteristic intersect with their other identities such as the education level of parents and income (McGovern *et al.*, 2017; Yang *et al.*, 2018; Wu, 2019). In addition, some studies also revealed that the maternal education (Johri *et al.*, 2016; Hashmi *et al.*, 2019) and maternal nutrition status also determine the stunting condition of the child (de Araújo *et al.*, 2016). Teen mother tend to discontinue their school earlier to get married which makes them reluctant with poor knowledge of maternal education (Mangeli *et al.*, 2017). The combination of those individual characteristics is complex issue at the micro level. This is a common problem at the micro level which leads to make individual fail to improve health outcomes.

Gender also appears at meso level of health system such as community or health care organization. Figure 1 explains that stunting problem at meso level of health happens in health care organization. Health care organizations are supposed to create gender-sensitive intervention programs such as promoting women's empowerment and gender equality, communicating to change nutrition behavior, maternal nutritional counselling.

Women's empowerment affects the odds of stunting depending on how women's empowerment was developed and measured. Women empowerment measured as the mother's age minus the father's age. A larger parents' age gap correlate with lower women's empowerment that associated with higher odds of child stunting (Knaap and Smits, Jeroen, Smits. Schrijner, 2018).

Mothers of the children who received stunting counselling can lower the stunting prevalence of their children. Nutrition counselling had good impact on enhance the Infant and Young Child Feeding (IYCF) practice that significant can reduce the prevalence of child stunting (Mistry, Hossain and Arora, 2019).

Macro-level on health system concerned about policy problems. Figure 1 explains constraint of stunting at the macro level such as Universal Health Coverage (UHC). Children in Argentina who protected by Universal Health Coverage programs had low risk for being stunted and underweight (Nuñez *et al.*, 2016).

Stunting is fraught with gender issues and gender interacts with social determinants. A study conducted in Ethiopia found child and women are risky for poor nutrition where economic and social inequality lean to be higher. Women are often be malnourished due to their gender status even though the food is available. This study also found gender and socioeconomic demographic factor as size of the family, diet during pregnancy had significant associations with undernutrition (Ersino *et al.*, 2018).

Interaction between gender and social determinant are different in each level of health system. First, micro level of health system. Social determinant of stunting at this level that interact with gender are education of the mother, maternal education, and nutritional status of the mothers.

The education of the mother is associated with children's underweight and stunting child. Children had lower likelihood of being undernourished when mother had greater education (McGovern *et al.*, 2017). A low educational attainment of the mother significantly can increase the risk of stunting (Mgongo *et al.*, 2017).

A study conducted in Tanzania found maternal education can reduce the odds of child's underweight and stunted. Maternal education significantly associated with stunting (Muhoozi *et al.*, 2016) and had protective effect against child undernutrition (Mgongo *et al.*, 2017).

Another social determinant such as mother's nutritional status. Nutritional status of pregnant women is very important to observe and supply adequate nutrition in infant's first month of life. The vulnerable period of a child's life lasts from conception to the first 12 months after childbirth. This period is highly depends on nutritional status of the mother (Valente *et al.*, 2016).

Second, meso level of health system. Gender interacted with stunting nutrition-sensitive intervention such as maternal nutrition counseling. Maternal nutrition counseling can reduce the prevalence of stunting because

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female community health worker's involve and effective monitoring programs (Mistry, Hossain and Arora, 2019). Another study found that nutrition counseling ineffective to reduce stunting, but this study does not explain the reason of ineffective nutritional counseling (Nikièma *et al.*, 2017).

Gender also interacted with nutrition-sensitive intervention such as improving access to nutritious foods. Woman likely have unequal access to nutritional foods that can influence stunting. A program to improve access to nutritious food is Enhanced Homestead Food Production (Haselow, Stormer and Pries, 2016).

Third, macro level of health system. Gender also interacts with the social determinant of stunting on this level. Universal Health Coverage is one of the determinants of stunting. Argentina had program to increase health assessment and lower health access inequalities focusing on Universal Health Coverage (UHC) for high-risk groups. Argentina had framework to increase health services quality and health services access for pregnant women and children under 5 years old (Nuñez *et al.*, 2016).

CONCLUSION

Our literature review in the micro level of stunting shows that this problem is not gender neutral. The meso-level of stunting shows that recent programs of stunting are nutrition specific and nutrition sensitive. The macro level of stunting shows that policy can decrease the stunting problem. Hence, the intervention should be more gender-sensitive and responsive.

SUGGESTIONS

Stunting programs should be nutritionally specific and sensitive. Furthermore, stunting programs should be gender-sensitive too. Thus, it can resolve stunting problems among children.

ACKNOWLEDGMENTS

Thank you, Mrs. Nuzulul, for the guidance and assistance in study design, data collection, data analysis, literature review.

CONFLICT OF INTEREST

The author has no conflict of interest.

FUNDING SOURCE

The article does not have a funding source.

AUTHOR CONTRIBUTION

Author Nuzulul Kusuma Putri is responsible for Study design, data collection, data analysis, literature review. Author Maulida Rahmawati manuscript writing, literature review, reference.

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