Relationship Between Family Income And Availability Of Basic Sanitation In Stunting Locus

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Abstract

Basic sanitation is influenced by many factors, one of which is welfare. As a component of welfare formation, income directly or indirectly influences sanitation behaviour, impacting a person's health. In children, poor health and nutritional intake are one of the causes of stunting. This study aimed to analyze the relationship between family income and the availability of basic sanitation at a stunting locus, one of which is in a village in Bandung Regency. This research method uses quantitative correlational methods with secondary data analysis. It obtained 204 respondents based on purposive sampling calculations, which were analyzed using the Chi-square test. The study found that the community's income was below the Regency UMK by 58.8%, equivalent to UMK IDR 5,000,000 as much as 38.7%, above IDR 5,000,000 as much as 2.5%. Meanwhile, 77.9% of clean water sources, 70.1% of waste management (latrines) and wastewater, and 5.9% of waste disposal meet the requirements of good condition. The Chi-Square test shows that income has no significant relationship with clean water sources (r=0.448), latrine management (r=0.325), and garbage disposal (r=0.240). So there is no relationship between family income and the availability of basic sanitation, considering that other factors affect the availability of basic sanitation.

Keywords: basic sanitation; children; family income; stunting.

Introduction

Sanitation is one of the leading health problems in Indonesia. This basic sanitation is a minimum environmental health requirement that every family must own to fulfill their daily life (Kementerian Kesehatan RI, 2016). In 2005 the Indonesian government began to pilot community-led total sanitation (CLTS) (Mukherjee & Shatifan, 2010). The focus of this CLTS is different from previous programs, which focused on subsidies but instead on-demand creation through a series of intensive community mobilization activities. Starting in 2008, CLTS has become an underlying part of the national strategy in Indonesia called "Community-Based Total Sanitation (STBM), which prioritizes behavior, social change, and community empowerment. Based on the Peraturan Menteri Kesehatan nomor 3 Tahun 2014 concerning STBM, it is stated that to strengthen efforts for clean and healthy living behavior, the spread of environment-based diseases, as well as access to drinking water and basic sanitation, it is necessary to carry out STBM (Kementerian Kesehatan RI, 2014).

However, in 2022 Indonesia, only around 80.29% of households have access to sanitation that is appropriately managed (Badan Pusat Statistik, 2021). Meanwhile, the government's target is in line with the 2020-2024 National Medium-Term Development Plan (RPJMN), namely the realization of 90% access to proper sanitation by the end of 2024 (Kementerian PUPR RI, 2020). According to data from the Dinas Kesehatan Provinsi Jawa Barat (2021), in 2020, it is estimated that only around 74.1% of families in West Java will have access to adequate sanitation facilities (healthy toilets).

Even though the STBM program has been implemented throughout Indonesia, including West Java, many factors have contributed to the low condition of increasing access to proper and safe basic sanitation. Facilities and infrastructure, including PDAMs that have not been able to demonstrate the optimal performance of the Drinking Water Supply System (SPAM), Fecal Sludge Treatment Plants (IPLT) that are not yet operational, limited integrated waste management infrastructure (TPST) are just a few of the many factors that hinder the implementation of the RPJMN which has been formulated (Perpres RI, 2020).

By the problems that Indonesia is still facing, sanitation behavior is shaped by social demographic and non-social demographic influences, including macro and microeconomics, legal and political determinants, religion, education, and technological change (Khanna & Das, 2016; Sara & Graham, 2014). Welfare and access to water are factors that influence the availability of basic sanitation, considering that there are costs that need to be incurred by families (Hirai et al., 2018). Welfare is an accumulation of many things, gathered in material, physical, psychological, and social aspects, frowned upon. However, in general, the measurement of material well-being can be done by measuring income level.

Basic sanitation is one of several root problems that occur in children, including nutritional problems. Nutritional status is crucial for growth, especially from the gestation period until a person is two years old, or the First 1000 Days of Life (HPK) period. During this period, a child's development and growth, such as physical growth, creativity, emotional, language skills, intellectuals, and so on, which will affect life, which is permanent and difficult to repair (Kementerian Kesehatan RI, 2019a). Nutritional status is influenced by two factors, namely, directly and indirectly. Direct factors include the quality and quantity of food consumed and infectious diseases. At the same time, indirect factors include environmental sanitation, socioeconomic, birth spacing, and income (Irianti, 2018). In line with evidence that environmental sanitation hygiene is related to the nutritional status of children (Riski, Mundiastutik, & Adi, 2019; Simbolon, Jumiyati, & Rahmadi, 2018).

This nutritional status can be used as a guide in preventing risky diseases in children in the future. Poor nutritional status in children can cause delays in motor skills, stunted brain growth, decreased immune system, and stunted children's physical growth. Concerning nutritional problems, Indonesia has a sizable problem with stunting (Kementerian Kesehatan RI, 2019b). Stunting

itself is a failure in the growth process of a child caused by chronic malnutrition and recurrent illness during its growth period, especially from the time it is in the womb until the child is five years old. It can permanently reduce a child's physical and cognitive capacity and cause lasting damage (UNICEF, 2022). In the end, if a child has chronic malnutrition due to the accumulation of predisposing factors, one of the problems that may arise is stunting. As stated by Beal et al. (2018) and Tahangnaccaa et al. (2019) where stunting in children is related to determinants such as; premature birth, short birth length, non-exclusive breastfeeding, chronic morbidity rates including diarrhea, low maternal education, the housing including inadequate sanitation and water sources, and poor health access.

Sukamulya Village itself is a stunting locus in Rancaekek District, Bandung Regency (BPS, 2021) . The latest report by one of the PKK cadres stated that there were approximately 96 children who had a condition of weight-for-height status which was below average for age. At the same time, the number of children confirmed as stunted is reported to be eight. From direct observations in Sukamulya Village, it is clear that there are sanitation conditions, one of which is that in Dusun Tiga, there are still houses that do not have access to private latrines, and there is no septic tank to accommodate waste from latrines. There are also several sources of water that taste, color, or smell. On average, the waste processing carried out by the people of Sukamulya Village is still carried out by conventional burning. As a community nurse, various roles can be carried out to improve stunting conditions in the community, especially the people of Sukamulya Village, namely as case managers, implementers of nursing care, educators, advocates, counselors, role models, case inventors, and reformers (Kementerian Kesehatan RI, 2016).

In previous research, the results still needed to be more consistent to answer problems related to the relationship of a single component to the availability of basic sanitation. The absence of an explanation of why this happens raises a question about other components that affect the availability of sanitation, which can have implications for increasing the risk of stunting in children. This research was conducted to confirm whether the other components cannot be separated from one another in their influence on the provision of basic sanitation by the family. Referring to this, the researcher is interested in researching "The Relationship between Family Income and Basic Sanitation Availability at Stunting Locus," one of which is Sukamulya Village, Rancaekek District, Bandung Regency.

Research Methods

This study uses a correlational research method with a secondary data analysis approach. The data used in the research is data obtained from the 2022 Riset Kompetensi Dosen Unpad (RKDU) by a team of lecturers from the Faculty of Nursing, Universitas Padjadjaran with the research title "Environmental Modification Through Sanitation, Clean Water, Hygiene, and Nutrition" in Sukamulya Village, Rancaekek District, Bandung district. The population in this study were people in the stunting locus of Sukamulya Village, Rancaekek District, Bandung Regency. The sample selection in this study was based on inclusion criteria: community members who are married, widows, or widowers who already have income. At the same time, the exclusion of the sample in this study was based on exclusion criteria, namely, community members who were not married and did not have income. By using a purposive sampling technique which was calculated using the Slovin Formula, the number of respondents in this study was 204 people from the 418 samples of the primary research that had been conducted. Data analysis in this study was carried out using univariate and bivariate methods. Univariate analysis was carried out using the frequency distribution method, which will describe the variables of family income and the availability of basic sanitation. While in this study, bivariate analysis was carried out using the Chi-square test (x2), which was used to test the hypothesis that there is a significant relationship between the independent and

dependent variables.

Determining the condition of good basic sanitation is done by looking at several indicators. According to Kementerian Kesehatan RI (2019a), in the 2018 Riset Kesehatan Dasar (Riskesdas), basic sanitation for healthy waste and wastewater (latrine) management has good condition indicators such as availability of family and private latrines, availability of septic tanks, and distance of septic tanks from water sources net > 10 m. Meanwhile, indicators of excellent condition for waste disposal include sorting waste, closing trash cans, dumping by individuals and officials at TPS, or composting themselves. The 2018 Riskesdas also stated indicators of good conditions in basic sanitation of clean water sources, including physical water quality, odorless, tasteless, colorless sources of bottled or refilled eating/drinking water, draining the tub less than once every three days or more than three days very. If ≥75% of each of these sub-categories is fulfilled, then primary sanitation conditions can be categorized as good (Kementerian Kesehatan RI, 2019a).

Results

Charateristic Respondens

Table 1 shows the distribution of demographic characteristics. The highest family income is below the UMK of Bandung Regency (< Rp. 3,241,929.67). The most data for the age category of the sample is in the range of 40-59 years, namely 48%. At the same time, the highest level of education among the sample is high school, namely 41.2%. Furthermore, the most types of work among the sample are laborers, with a percentage of 39.7%. The 204 residents as a sample in Sukamulya Village demonstrated quite diverse conditions, including:

Table 1 Distribution of sample characteristics (n=204)

Characteristic		Frequency	Percentage (%)
Family Income	Over IDR 5,000,000	5	2,5
	Equivalent to UMK Bandung – IDR 5,000,000	79	38,7
	Under UMK Bandung (< IDR 3,241,929.67)	120	58,8
Age	20 – 39 years old	68	33,3
	40 – 59 years old	98	48.1
	60 – 79 years old	38	18,6
Education	No school	5	2,5
	Elementary school (SD)	48	23,5
	Junior high school (SMP)	57	27,9
	Senior high school (SMA)	84	41,2
	University	10	4,9
Employment	No work	35	17,1
	Laborer	81	39,7
	Civil servant/ Army/ Police	13	6,4
	Private employees	13	6,4
	Entrepreneur	43	21,1
	MSME employees	3	1,5
	Farmers, ranchers, etc	16	7,8

Based on the results of the determination, the condition of waste management and wastewater (latrine) was obtained; as many as 61 (29.9%) samples showed terrible conditions, while the other 143 (70.1%) showed good conditions. In basic sanitation of garbage disposal, it was found that 192 (94.1%) samples showed bad conditions while only 12 (5.9%) samples showed good conditions. Meanwhile, basic sanitation of clean water sources obtained several 45 (22.1%) samples showing bad conditions and 159 (77.9%) other samples showing good conditions.

Table 2 Distribution of basic sanitation conditions (n=204)

Condition of Basic Sanitation Components	Baik		Buruk	
	Amount	Percentage	Amount	Percentage
Clean water source	45	22,1%	159	77,9%
Waste management (latrine) and wastewater treatment	143	70,1%	61	29,9%
Waste disposal	12	5,9%	192	94,1%

Analysis of Relationship between Family Income and Availability of Basic Sanitation

Table 3 shows the results of the Pearson Chi-Square analysis, which states that there is no significant relationship between the variable family income and the availability of basic sanitation; and clean water sources (p= 0.448), waste management (p= 0.325), and waste disposal (p = 0.240)

Table 3 Results of Statistical Analysis of the Relationship between Family Income and Basic Sanitation Availability

Karakteristik Pendapatan			< UMK Bandung (IDR 3,241,929.67)	Equal UMK Bandung –IDR 5,000,000	> IDR. 5,000,000	Pearson Chi-Square
Komponen Ketersediaan Sanitasi Dasar	Sumber Air Bersih	Baik	94	60	5	0.448
		Buruk	26	19	0	
	Pengelolaan Limbah (Jamban) dan Pengolahan Air Limbah	Baik	84	54	5	0.325
		Buruk	36	25	0	
	Pembuangan Sampah	Baik	5	6	1	0.240
			115	73	4	

Discussion

Relationship between Family Income and Clean Water Sources

Clean water has a risk of contamination by bacteria, so it can trigger various kinds of diseases considering; apart from being a source of drinking, clean water can also be used to wash cutlery and the kitchen, wash clothes, wash fruits and vegetables, and so on. Clean water that is not polluted will reduce the level of illness in a person, especially in children (Chirande et al., 2015), so that the risk of stunting in children due to poor water sources can be reduced (Danaei et al., 2017). The condition of basic sanitation for clean water sources in Sukamulya Village shows that 77% (159 respondents) have fulfilled the basic sanitation requirements for good clean water sources. From the Chi-Square test, it was found that there was no relationship between family income and the availability of basic sanitation for clean water sources. This is because several water sources in Sukamulya Village have color, taste, or

smell conditions. So, with these conditions, people choose to use gallons of bottled water purchased from water depots for drinking purposes regardless of the amount of family income earned.

This result contradicts a study conducted by Munkhondia, Simangolwa, and Maseda (2016) which states that heads of households with medium to high incomes choose better sanitation solutions than heads of households with low incomes. However, the results of research conducted in Sukamulya Village follow Rizani (2017) which states that access to clean water sources, especially for consumption purposes, has no relationship with income. This is because the need for clean water is a basic need for every human being in order to maintain their survival. So that every individual or family will always try to meet these needs regardless of the conditions they face (Kementerian Kesehatan RI, 2019b).

Sukamulya Village is no exception; although several areas are spread across hamlets one, two, and three, there are water sources that show pollution characteristics (smell, color, and taste). The community tries to overcome them by using filters or filters on water pumping machines. The community uses filtered water for MCK purposes (bathing, washing, and toilet). In Sukamulya Village, there are also sellers of bottled drinking water or gallon water as a source of drinking water for most of the village community. With a price of only Rp. Five thousand people will tend to buy a gallon of bottled water (Juita, 2019).

A good understanding in terms of meeting the need for clean water needs to be maintained by various parties, especially the community itself. This can be a means for community nurses to carry out their nursing care. Oktariani, Aulia, and Sari (2021) stated that understanding community behavior in fulfilling clean and healthy living needs, especially the need for clean water, can be increased or maintained through various efforts, such as providing communication channels, information, and education, building an atmosphere, and community movements. So that community nurses can carry out their nursing role as educators and counselors through a series of health education to maintain an understanding of meeting the needs of a clean and healthy life.

Relationship of Family Income with Waste Management (Latrine) and Wastewater Treatment

Basic latrine sanitation and good wastewater management will separate feces and liquid waste septically and hygienically from human contact. Pathogenic microorganisms present in wastewater can also endanger human health (Nugraheni, 2012). Vectors and rodents can breed in open SPAL conditions. Puddles caused by open SPAL can also cause odors because they flow directly to the ground, so in the end, they will pollute the soil and water (Wahid, Maria, & Hidayanty, 2020). This will trigger various infectious diseases such as diarrhea and intestinal worms so that the absorption of nutrients by the body will be disrupted. Recurrent infections in the intestine will limit the absorption of nutrients and calories so, and they can cause malnutrition (Shrestha et al., 2020). In the end, if malnutrition is not resolved, the risk of children experiencing stunting will increase (Ramdaniati & Nastiti, 2019).

The condition of most of the waste management and wastewater (latrine) in Sukamulya Village has met the requirements, namely 70% (143 respondents). From the Chi-Square test, it was found that there was no relationship between family income and the availability of basic sanitation for waste and wastewater management (latrines). The results of this study are not in line with the research conducted by Febriyanti et al. (2021) which states that there is a relationship between family income and healthy latrine ownership with a moderate level of relationship. However, the results of research conducted in Sukamulya Village are consistent with Yulizar et al. (2022) who found that family income was not closely related to providing quality latrines. Increasing awareness and understanding of family members regarding the importance of sound waste and wastewater (latrine) management is only sometimes in line with the increase in family income they get. This is because all determinants at the individual and family levels, such as attitudes, behavior,

social determinants, and other well-being, also influence efforts to provide quality latrines (Jain et al., 2019), regardless of how much income one has.

In Sukamulya Village, although residents still use public latrines, the average resident's house already has a private family-owned toilet. However, there were also private latrines that did not have a septic tank, and the distance between the septic tank and the source of clean water was less than 10 m. In addition, most of the wastewater is discharged directly into open ditches, which sometimes causes terrible odors. In this case, community nursing can be present in various efforts to empower the community through a series of programs to improve quality latrines, as was done by Arfan et al. (2021) in Sukabangun Village, Pontianak, through the healthy latrines program which was carried out by collecting data, counseling, field learning practices, and carrying out renovations to pilot latrines in the village.

Relationship of Family Income with Garbage Disposal

Suitable waste disposal will prevent humans from the risk of polluting the environment. Garbage that is not appropriately treated also becomes a breeding ground for vectors such as mosquitoes, flies, and cockroaches at risk of infecting humans (Tohit et al., 2019). In addition, various microorganisms, such as bacteria, will develop around the waste pile, which also risks human health (Meng et al., 2021). This is related to the causes of stunting, where health problems, mainly due to pollution, will trigger environmental enteropathy, which inhibits nutritional intake in the human body, so that the risk of stunting also increases (Vilcins, Sly, & Jagals, 2018).

The research results in Sukamulya Village showed that 94% (192 respondents) needed to meet the basic sanitation requirements for suitable waste disposal. From the Chi-Square test, it was found that there was no relationship between family income and the availability of basic sanitation for garbage disposal. This indicates that other strong determinants may influence the waste disposal and management process. Handayani et al. (2018) stated that apart from family income, the location where the family lives and the level of education and knowledge regarding the importance of good waste management from a health perspective also influence household waste management actions. The location of the family residence significantly affects waste management behavior, where households in urban areas have a higher probability of managing their waste than those in rural areas. These results are supported by Anggraini (2014) which also states that the lack of external infrastructure causes poor waste management patterns in society. Perdana (2018) also stated that compared to income, the distance between landfills and residents' homes has more influence on the pattern of community waste disposal in temporary landfills. Education and knowledge also positively impact household waste management because an understanding of the importance of managing and disposing of waste in a healthy way will also influence how individuals or families handle household waste (Handayani et al., 2018).

In Sukamulya Village, the community's habitual patterns still influence waste disposal and management. One of them is about the destruction of waste, which is almost entirely done by burning. In addition, the absence of a centralized temporary disposal site means there are still large piles of waste at some points. Most people's waste storage before being disposed of needs to be sorted first and is only placed in sacks. So that sometimes wet garbage emits water with an unpleasant odor that seeps out of the garbage storage area in the form of sacks. Therefore, community nurses can participate as case finders, community advocates, as well as reformers in dealing with problems of waste disposal and management (Kementerian Kesehatan RI, 2022) by making various coordination efforts with various authorities, such as the village government, regional health centers, to the environmental service. Life in improving people's understanding and also existing waste management infrastructure (Kementerian Lingkungan Hidup dan Kehutanan (LHK) RI, 2018).

Limitations

There are limitations experienced in this study so that later it can be considered by

future researchers in perfecting their research. Some of these limitations, including; data collection, particularly on the availability of basic sanitation, was only conducted through interviews. This sometimes does not show the actual condition of the client because it is influenced by factors such as knowledge, understanding, honesty, and so forth. The research object only focuses on the relationship of variables contained in secondary data sources. The determinants of the availability of basic sanitation still need to be developed, especially on psychosocial and normative, as well as structural factors.

Conclusions

Availability of basic sanitation through its components, sources of clean water, waste management (latrine) and wastewater treatment, and garbage disposal have no relationship with family income. This is because many aspects, from individual and social access factors to supporting facilities and infrastructure, also influence the provision of basic sanitation owned by families. Suggestions for future research should be able to explore further other determinants that affect the availability of basic sanitation in families.

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