Household Sanitation Inequalities in Flats, Slum Areas, and Residences in Achieving the Criteria for Healthy Housing, Samarinda City

Ayudhia Rachmawati, Vivi Filia Elvira and Syamsir Syamsir

Department of Environmental Health, Public Health Faculty, University of Mulawarman, Samarinda, Indonesia

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Abstract: The availability of healthy housing is one of the elements that affect public health. In general, there are three types of houses in Samarinda City: residences, flats, and slum houses. The issue with Samarinda City's housing is that there are still some homes with poor sanitation. The research aims to determine the relationship between housing criteria, housing components, sanitation facilities, and occupant behaviour. This study was carried out in November 2022. This study's sample size was 30 houses divided into three settlement groups (residences, slums, and flats). The data analysis used was univariate, and bivariate analysis used the chi-square test. There is no relationship between the housing components and the final score for determining the criteria for a healthy house (p<0.0001). While the variables of sanitation facilities and occupants' behaviour were significantly related to the assessment of healthy home criteria (p<0.013), There is a relationship between the sanitation facilities and occupants' behaviour and the housing criteria of residences, slums, and flats.

1 INTRODUCTION

The availability of healthy housing is one of the elements that affect public health. Good sanitation should be standard in every home. Homes with poor sanitation can act as breeding places for disease agents. The level of risk of disease transmission for the occupants is affected by the sanitation of the living space. The components of safe housing and the accessibility of sanitation facilities that satisfy the standards can support the occupants health (Agungnisa, 2019).

Based on national data for 2020–2022, access to proper sanitation for households in Indonesia has not exceeded 81% (BPS, 2022). This indicates that there are still homes with inadequate sanitation facilities. Access to good sanitation in the community is affected by its financial status. For example, it costs a lot of money to create proper latrines. For people with lower incomes, it has been difficult to access proper latrines (Dirjen PPM & PL, 2022). Actually, there is already a PAMSIMAS programme that helps those in poverty get appropriate sanitary facilities. However, the programme has not been able to reach more people (Direktorat Air Minum Kementerian PUPR, 2022).

Samarinda City, the capital city of East Kalimantan Province, has a fairly dense population. In general, there are three types of houses in Samarinda City: residences, flats, and slum houses. The issue with Samarinda City's housing is that there are still some homes with poor sanitation. Particularly, the house near the river lacks proper sanitary facilities (Rofandy, 2017).

Some of the slum houses in Samarinda City are located around a tributary of the Mahakam River. People who live in slum areas find it difficult to get basic sanitation because of their low level of funds. In addition, the risk of sickness is increased by the lack of a clean and healthy lifestyle among the people in the slum area. Some homes use river water as a source of water for sanitation and hygiene needs. Even though the quality of the river water does not meet health standards (Daramusseng & Syamsir, 2021). Compared to slum homes, Samarinda City's flats are better organised, but they still have issues with sanitation, including a high occupancy rate and a subpar physical environment. Many people in Samarinda City choose residences for their homes.

There are still around 42 hectares of slum areas in Samarinda City. The population density in the area is relatively high (Dinas Perkim Kota Samarinda, 2022). There are three flats in Samarinda City that are

located in Bengkuring, Sungai Kunjang, and Harapan Baru. Most of the population lives in dense residences. It is necessary to conduct a study related to the description of the house's environmental health quality and the healthy life behaviour of the house. Based on the problem, the research aims to determine the relationship between housing criteria, housing components, sanitation facilities, and occupant behaviour.

2 METHODS

The research design for this study is cross-sectional (Wang & Cheng, 2020). This study is part of an observational study that analyses data on housing components, sanitation, and resident behaviour in correlation with assessing healthy housing criteria in three different groups: residences, slums, and flats. This study was carried out in November 2022. This study's sample size was 30 houses divided into three settlement groups. Purposive sampling has been used to collect data (Dolores &Tongco, 2007). The sample selection in this study was based on the researcher's considerations; the criteria were permanent residence (not nomadic), and heterogeneity in sample selection was highly recommended. In this study, direct observation and interviews were conducted using a healthy home assessment form developed by the Ministry of Health, Republic of Indonesia (Ditjen PP &PL Depkes RI, 2007). The data analysis used was univariate, describing the differences in the proportion of healthy homes fulfilled in the three settlement groups studied. Furthermore, the bivariate analysis used the chi-square test to see the relationship between the independent variables (house components, sanitation, and occupant behaviour) and the dependent variable (assessment of healthy home criteria). If the data cannot meet the existing requirements, the Fisher's exact test will be used. A house is declared healthy if it has a total value of $\geq$ 1,068; an unhealthy home has a total value of < 1,068. The limitations of this study are the relatively small number of samples, so the data distribution becomes abnormal, and the bivariate analysis will only look at the relationship without analysing the differences in the three settlement groups.

3 RESULTS

F The condition of the ceiling, walls, floor, bedroom, and living room windows, ventilation, kitchen ventilation, and lighting are all assessed as housing components. It is stated to be eligible if it fulfils five

of the eight variables measured and observed. Sanitation amenities include clean water, latrines, wastewater disposal facilities, and waste disposal facilities. It is said to be eligible if it fulfils three of the four requirements. The practice of opening bedroom and living room windows, cleaning the yard, disposing of infant and toddler faeces in the latrines, and disposing of waste in its place are all examples of occupant behaviour. It is said to be aware if it fulfillsthreeof the four criteria asked.

Table 1: Characteristics of Housing Components, Sanitation Facilities, and Occupants' Behaviour in Residences, Slums, and Flats.

Variable	Residences		Slums		Flats	
	(n)	(%)	(n)	(%)	(n)	(%)
Housing Components						
Not eligible	1	10.0	5	50.0	0	0.0
Eligible	9	90.0	5	50.0	10	100.0
Sanitary Facilities						
Not eligible	8	80.0	10	100.0	5	50.0
Eligible	2	20.0	0	0.0	5	50.0
Occupants' Behaviour						
Unaware	0	0.0	5	50.0	5	50.0
Aware	10	100.0	5	50.0	5	50.0
Housing Criteria						
Unhealthy	6	60.0	10	100.0	5	50.0
Healthy	4	40.0	0	0.0	5	50.0
Total	10	100.0	10	100.0	10	100.0

Table 1 shows the characteristics of the housing components, sanitation facilities, and occupants' behaviour of a number of 30 houses divided into 3 settlement groups. In residential areas, it was found that 90% of the respondents' houses fulfilled the requirements for housing components, while 50% were in slums and 100% were in flats. An interesting result is that 80% of residential sanitation systems don't fulfil the requirements. This is due to wastewater disposal facilities that keep pouring into open ditches (80%), as well as waste disposal facilities that are watertight but unprotected (80%). Slum areas fail to fulfil sanitary criteria 100%, whereas flats fail 50%. In terms of occupant behaviour, as many as 50% of people in flats and slum regions are unaware of the importance of environmental protection. As a result, 100% of slum areas, 60% of residential areas, and 50% of flats are excluded from the criteria for healthy houses.

Table 2 shows that there is no relationship between the housing components and the final score for determining the criteria for a healthy house (p<0.0001). While the variables of sanitation facilities and occupants' behaviour were significantly related to the assessment of healthy home criteria (p<0.013).

Table 2: Relationship Between Housing Components, Sanitation Facilities, and Occupants' Behaviour towards the Assessment of Housing Criteria

Variable	Housing Criteria						P-value
	Unhealthy		Healthy		Total		
	n	%	n	%	n	%	
Housing Components							
Not eligible	6	100.0	0	0.0	6	100.0	0.141
Eligible	15	62.5	9	37.5	24	100.0	
Sanitary Facilities							
Not eligible	21	91.3	2	8.7	23	100.0	<0.0001(*)
Eligible	0	0	7	100.0	7	100.0	
Occupants' Behaviour							
Unaware	10	100.0	0	0.0	10	100.0	0.013 (*)
Aware	11	55.0	9	45.0	20	100.0	

4 DISCUSSIONS

Housing and Settlement is a unified system consisting of education, housing management, housing area management, maintenance and repair, prevention and improvement of slum quality, land acquisition, financing systems, and community participation. The government's efforts in implementing sanitation inspections of housing and settlements are one of the steps to describe the environmental quality conditions of people in residential and residential environments.

The physical, chemical, and biological conditions that exist in the house, dwelling, and residential environment determine the health of the housing and settlement environment to ensure that residents are in optimal health. Healthy housing requirements and the housing environment are technical health regulations that must be completed in order to protect occupants and persons living in housing or settlements, as well as the surrounding community, from risks or health concerns. Healthy housing criteria, which include environmental and housing needs as well as the house itself, are critical since housing has a significant impact on the health of individuals, families, and communities.

Based on the results of the research, 90% of respondents' residences fulfilled the standards of the housing component in residential areas, while 50% were in slums and 100%; were in flats. This is contradictory to the assessment weight for sanitary inspection of housing and settlements, which states that the significance of the home component should be 100%, however, the results of this study were only found in flats that matched the standards. Ceilings, walls, flooring, bedroom windows, living room windows, ventilation, kitchen exhaust, and lighting are the components of concern.

According to the Minister of Health's Decree No. 829/Menkes/SK/VII/1999, health criteria for residential homes include the following parameters: 1. Construction materials a. Not made of materials that can release harmful substances into the environment, such as total dust less than 150 ug/m2, asbestos less than 0.5 fibre/m3 per 24 hours, and lead (Pb) less than 300 mg/kg. b. not composed of components capable of supporting the growth and development of harmful microbes. 2. Components and spatial organisation a. The floor is waterproof and easy to clean; b. The house's walls are ventilated; c. The bathroom and laundry room are waterproof and easy to clean; d. The house's ceilings are easy to clean and not prone to accidents; e. lightning rods are present; f. the space is organised according to its function and designation; and g. the kitchen must have a smoke disposal system. 3. Direct or indirect natural and/or artificial lighting that illuminates the entire space with a lighting intensity of 60 lux and does not dazzle the eye (Kepmenkes RI No. 829, 1999).

Aspects of the physical environment in slum settlements with a score of 50% indicate a substantial difference in outcomes, where the component of healthy housing is suitable if it fulfils the government's 100% rating. This, obviously, has an impact on public health because the house is a part of all activities, beginning with bathing, preparing food for the family, and spending time, which will bring about a sense of comfort and security for each family. This is consistent with the research results of Wahyudi et al., who showed that a terrible environment could disturb the balance of the agent-host interaction process. If one feature is disrupted, the occurrence of disease in the host can be affected. An unsanitary environment also increases the possibility of disease agents forming and increases illness transmission (Wahyudi et al., 2019).

People who live in slums and begin to complain about their health's diminishing quality must be taught the importance of protecting the health of their surroundings. This is supported by the behaviour of people who are still unaware of the importance of environmental protection, as evidenced by research findings that, in terms of occupant behaviour, as many as 50% of people in flats and slum settlements are unaware of the importance of environmental protection. People's habits of not opening their bedroom windows, not cleaning the yard, dropping babies' and toddlers' faeces into the toilet, and not throwing trash into the trash can demonstrate that this

conduct is harmful to human health. Nurlaila's (2022) research demonstrates that diseases such as diarrhoea can be induced by poor habits. The analysis results reveal that there are independent variables that have a significant link with the incidence of diarrhoea because all analyses had a p-value greater than 0.05. This study concluded that there was a link between diarrhoea and low sanitation in the environment.

Several studies have found that sanitation facilities and occupant behaviour have a major impact on illness incidence. One example is a study conducted by Herawati et al. (2020), which found an association between sanitation facility quality (p = 0.000) and occupant behavior (p = 0.000) and stunting incidence. The incidence of stunting had no correlation with the quality of CTPS held by moms (p = 0.116; OR = 3.923; CI 95% = 0.678–22.705). However, because they have an OR higher than one, these three variables represent risk factors for stunting incidences.

Based on the research results, the assessment of the criteria for healthy housing in residences is also very good and of high quality, but for slum areas and flats, there are still a number of houses that do not fulfil the criteria for sanitation facilities and the behaviour of their people. This can be influenced by a person's economic and social status in that area. This theory is consistent with the research results of Kusumawati et al. (2015), who found an association between knowledge of healthy homes and occupancy quality, a relation between social status and the economy and housing quality, and a connection between knowledge of healthy homes and socioeconomic status and housing quality.

As a result, it can be inferred that everyone requires a healthy home for their family in order to adequately enhance their health state because an unhealthy home reduces work productivity and utilization. The components in the building's physical condition indicate that it appears to be quite satisfactory, implying that the majority of respondents live in residential areas since they are supported by qualified sanitation facilities.

5 CONCLUSIONS

The housing component does not have a significant relationship in determining the criteria for a healthy home, while sanitation facilities and occupant behaviour are closely related in determining the criteria for a healthy home in Samarinda. Only the flats are suitable for the criteria when looking at the house's components. Slum areas are unable to fulfil the criteria for sanitation facilities. All occupants who are living in residences are aware of the environment. The importance of the dissemination of knowledge in fulfilling the criteria for a healthy household in reducing disease and improving public health.

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