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A Case Study: House Condition of Stunting Children at Tidung Island, Jakarta, Indonesia

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ABSTRACT

A house or dwelling is one of the essential architectural elements designed to meet human needs. A house serves as a shelter, a place for protection, rest, and various activities. Houses and dwellings are designed to support their occupants by providing essential needs, security, aesthetics, a sense of pride, and even contributing to the occupants' health. Housing is an element that is often challenging to access and address in detail, including residential homes on Tidung Island. The varying sizes of houses and their increasing proximity to one another due to limited land availability have resulted in many homes losing access to natural lighting and ventilation. Previous research has indicated that the living environment significantly influences the prevalence of stunting in children. Stunting is a condition of malnutrition in children under the age of five that often affects their health and growth. The Jakarta city government of Indonesia already tries to reduce stunting rates among children by ensuring adequate nutrition. However, in some areas, progress has been slower, including on Tidung Island. According to previous studies, the factors contributing to stunting in children is not only to nutritional deficiencies, environmental conditions, housing quality, and poor sanitation also play a significant role in increasing the number of stunted children. As an initial study, this research aims to observe the living conditions of children experiencing stunting.

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1. INTRODUCTION

Housing is a fundamental human need, serving as a shelter and fulfilling essential requirements for safety, security, and well-being. Its recognition as a basic human necessity is embedded in both national and international frameworks, emphasizing its critical role in sustaining human life [1][2]. Houses and dwellings are designed to support their occupants by providing essential needs, security, aesthetics, a sense of pride, and even contributing to the occupants' health [3]. Housing is an element that is often challenging to access and address in detail [4]. In some area, the varying sizes of houses and their increasing proximity to one another due to limited land availability have resulted in many homes losing access to natural lighting and ventilation [5] that also happens in Tidung Island. Tidung Island is one of the islands in the Thousand Islands archipelago that, between 2012 and 2014, has developed significantly as a tourist destination, as well as a buffer for Jakarta Bay against coastal erosion [6]. Tidung Island tourism activities have clearly increased employment opportunities, residents' income, and other factors that support economic growth. However, they have also contributed to the shrinking of open spaces due to overcrowded residential housing and tourist

accommodations, coral reef degradation, a decline in environmental cleanliness [7] by growing reliance on motorcycles to save travel time, which corresponds with road and paving block damage on Tidung Island [8][9]. The fact that the local people activity affects the island's environment and residential areas can no longer be ignored, as over time it may affect the health conditions of Tidung Island residents. As one of the special cases in Tidung Island, we have a stunting Problem.

Stunting is a chronic condition caused by prolonged undernutrition, affects millions of children worldwide, with dire implications for their physical and cognitive development [10]. Globally, stunting prevalence has decreased over the last decade, but the World Health Organization (WHO) reported that 22% of children under five, or approximately 149.2 million, still suffered from stunting in 2020 [11]. The prevalence of stunting in Indonesia has shown a decreasing trend in recent years. According to the Indonesian National Nutrition Status Survey (SSGI) in 2022, the average annual stunting reduction achievement was 2.0% (2013 – 2021), with a stunting prevalence rate of 24.4% in 2021[12].

In Jakarta, capital city of Indonesia, the overall stunting prevalence has decreased in recent years due to improved healthcare services, better access to nutrition, and government initiatives aimed at addressing malnutrition. According to the Ministry of Health 2020, stunting rates in DKI Jakarta have seen a decline from around 27.5% in 2013 to 17.4% [13]. These reductions are largely attributed to urban infrastructure improvements, enhanced nutritional programs, and efforts to increase public awareness about child health and nutrition [14].

However, in remote and more isolated areas like Tidung Island, a part of the Thousand Islands district, progress has been slower. Geographic isolation, limited healthcare infrastructure, and poorer living conditions contribute to higher stunting rates compared to urban centers. Research shows that housing conditions, lack of access to clean water, and limited sanitation services are key factors contributing to persistent stunting issues on Tidung Island [15][16], while national interventions aim to address these issues, logistical challenges in reaching remote islands like Tidung continue to impede progress.

Housing conditions are one of the critical determinants of child health, particularly in terms of stunting : poor housing quality—characterized by overcrowding, insufficient ventilation, and inadequate sanitation—has a direct impact on the health outcomes of children [17][18]. Stunting is often linked to the environmental factors, as children living in substandard housing are more likely to suffer from infectious diseases that exacerbate malnutrition [19][20]. In Tidung Island, where many homes lack basic amenities such as clean water and proper sanitation, children are at a higher risk of malnutrition and stunting [21]. Environmental health plays a significant role in the occurrence of stunting [22], because there is a strong correlation between poor sanitation and childhood stunting in rural India [17]. On Tidung Island, inadequate access to clean water and sanitation facilities contributes to a higher incidence of waterborne diseases such as diarrhea, which significantly impairs a child's ability to absorb nutrients [23]. These conditions create a cycle of poor health outcomes, contributing to the persistence of stunting [24] [25] [26].

Urban sustainability, which emphasizes the importance of creating healthy living environments [27], is deeply intertwined with efforts to reduce stunting. Improving housing conditions, access to clean water, and sanitation are critical components of sustainable urban development, particularly in vulnerable communities [25]. In the context of Tidung Island, addressing housing-related issues is essential not only for improving health outcomes but also for ensuring the long-term sustainability of the island's urban infrastructure [28]. The Indonesian government's strategy to address stunting, known as Stranas Stunting, aligns with urban sustainability goals by focusing on improving housing, healthcare, and nutritional access [29].

In addition to physical infrastructure, socioeconomic factors play a critical role in stunting [30] found that poverty significantly increases the likelihood of children living in poor housing conditions, which in turn increases their vulnerability to malnutrition and stunting. In Tidung Island, many families depend on volatile income sources such as fishing and tourism [31], which affects their ability to afford nutritious food and access healthcare services. Economic instability, coupled with geographic isolation, exacerbates these challenges, leaving children vulnerable to long-term malnutrition and stunting [29][32]. The connection between poor housing and stunting is particularly evident on Tidung Island, where many homes lack proper sanitation and adequate living conditions [33][34]. Studies highlight the direct link between inadequate housing, environmental health risks, and the heightened incidence of stunting [14][20][35][21]. Initiatives aimed at improving living conditions, water, sanitation, environment, green open space, and infrastructure are related to

the stunting problem on the island [18][20][21][35][36]. This study aims to observe the housing conditions of children suffering from stunting in Tidung Island in specific year of 2024.

2. METHOD

As an initial stage of this study, to conduct observations of the homes of children experiencing stunting a structured research framework is required. In this research, all direct observations will serve as new findings regarding the relationship between stunted children and their homes or living environments. Stunting is a condition characterized by slower physical growth in children compared to the established standard. While nutrition is often the government's primary focus in combating stunting, this research team specifically delves into the living conditions of stunted children in Tidung Island. As preliminary research, the researchers will conduct interviews and simple observations to assess the general conditions and determine the feasibility of continuing this research to a more specific stage by evaluating the indicators of a healthy home in each household of stunted children in Tidung Island.

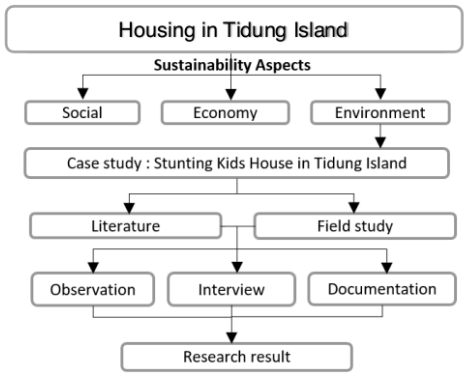


Figure 1. Research process diagram (source: author)

3. RESULTS AND DISCUSSION

This section will present data in the form of photographs of the existing conditions, accompanied by descriptive explanations of each home of a stunted child. The descriptions will be based on interviews with the parents or guardians of the stunted children residing in those homes. Based on local government data, there were 11 identified cases of stunting kids at Tidung Island in September 2024.

As a preliminary study, the research team conducted direct observations of 11 household with children diagnosed stunting that already informed by the local government. All the house will mention by Alphabet to hide personal information about the family. The observational data and visual documentation are presented below:

3.1. House 1

This House is occupied by the A. family with 5 family members. This house has 1 bedroom, kitchen connect with the sitting room, laundry area because the mother work as a home laundry, 1 toilet and 1 bath room. This house has 31 m^2 with many stuffs that makes the house wall mold in some area. The house has minimal openings and tends to rely on artificial lighting. The house also has a well that is directly connected to the living room and kitchen interior, making the house more humid. The roof frame of this house is left open without being covered by a ceiling. This condition will endanger the occupants due to direct and continuous exposure to asbestos. It is mentioned that this happens because the homeowner does not yet have the funds to close the ceiling of their house.

(a) (b) (c)

Figure 2. (a) well inside the house (b) outside area of the house (c) inside area of the house (source: author)

3.2. House 2

This house is occupied by the B. Family, consisting of 4 members, however the head of the family does not usually reside here due to his work as a fisherman. The head of the family usually returns home only after 3 months at sea and stays for 3 to 5 days before returning to his fishing duties. This Family has 2 children that one of them has diagnosed as a stunting.

Situated in a narrow alley accessible only by a single motorcycle, this house is completely overshadowed by an adjacent two-story building that blocking out the natural light. Its proximity to a dead end, less than a meter away, prevents a clear frontal view. Despite its compact size of 20.7 m2, comprising two bedrooms, a bathroom, and a kitchen, the house is remarkably dark due to the limited openings caused by its confined location. The interior features ceramic tile flooring and plastered walls. This house also has mold growth on the walls, particularly in the rooms that receive no natural light or ventilation at all.

(a) (b) (c)

Figure 3. (a) alley of the house (b) 1st bedroom that has a window open to the front of the house (c) 2nd Bedroom that has no ventilation and mold on the wall (source: author)

3.3. House 3

This house is occupied by the C. Family with the twin kids that one of them has diagnosed as a stunting kid. This house features a relatively spacious terrace and comprises two bedrooms. It also has a private well located at the rear of the property in a separate room, along with a separate kitchen and living room. Additionally, there is one bathroom situated at the back of the house. With a total floor area of 57 square meters, this house accommodates six family members. Due to the stunting condition of one of the children, the child's grandparents have moved in to assist with care.

The house has a roof frame and asbestos roofing without a ceiling, posing significant long-term health risks. It is mentioned that the house has been in this condition for a considerable period. Although the house has openings for ventilation and natural light, these are not fully utilized due to concerns about stray cats entering the premises. As a result, the occupants have opted to keep the windows and doors closed when they are inside, only opening the front door when they are on the terrace.

(a) (b) (c)

Figure 4. (a) alley of the house (b) 1st open to the front of the house (c) (source: author)

3.4. House 4

This house is occupied by the D. Family, consisting of 6 members. The head of the house work as a fisherman while the mother works laundry at home. This house placed near the ocean, so the house provides direct access to the fishing boat dock located on the seashore. Additionally, the house walls are constructed using lightweight concrete blocks that are left exposed without any plaster coating. The unique feature of this house is its columns, which are made of cast pipes.

This house features two bedrooms that face the living room, with no windows except for the bedroom doors. The bathroom is located at the rear of the house, combined with the kitchen and laundry area with a total floor area of 35 square meters. The house has only one window in the living room, relying primarily on the front and side doors that open directly onto the sea. The front part of this house is also used for cleaning and even drying fish caught by fishermen, resulting in a rather unpleasant odor.

(a) (b) (c)

Figure 5. (a) Front of the house (b) inside of the house (c) bedroom (source: author)

3.5. House 5

This house is occupied by the E. Family, consisting of 4 members with 23,3 square meters as total. This house has two openings at the front, one in the living room and the other in the bedroom facing the front. Both windows are never used and are always closed as the occupants are worried about stray cats and insects entering the house. The occupants also prefer to keep the doors closed due to the intense heat, but this causes the house to become damp and dark as it relies solely on artificial lighting.

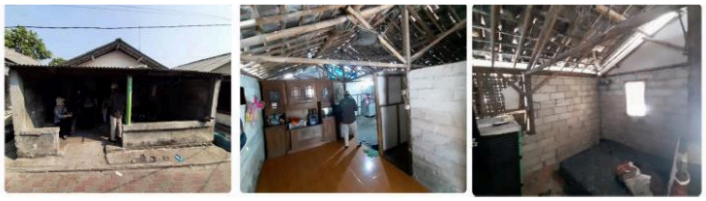
This house features a separate terrace from the living room and a kitchen combined with the bathroom with no door. It also has two bedrooms, one of which is connected to a large storage area. Additionally, there is a small storage area at the back of the house, with no active openings except for the door. The roof frame of this house is left open without being covered by a ceiling. This condition will endanger the occupants due to direct and continuous exposure to asbestos.

(a) (b) (c)

Figure 6. (a) Kitchen and Bathroom area (b) front of the house (c) inside the house (source: author)

3.6. House 6

The Sixth house occupied by the F. Family with 6 Family Members and a total of 42 square meters. There are parents, one grandparent and three children under 5th years old. The house has a bamboo roof frame that is in quite a deplorable condition. The weight of the tiled roof has caused some of the bamboo to bend. Additionally, many of the tiles are broken, necessitating the use of buckets to collect rainwater during showers. The floor is not entirely tiled; some areas are still covered in cement.



(a) (b) (c)

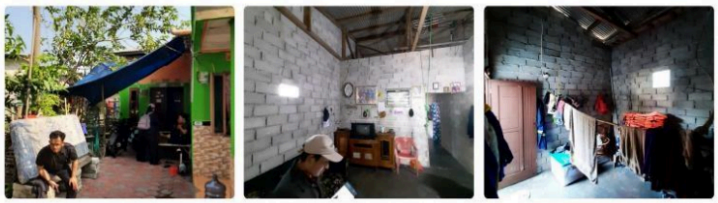
Figure 7. (a) front of the house (b) family room (c) bedroom to the front view (source: author)

The only openings in the house are located at the front, with one in the living room and another in the front-facing bedroom. The family room, back bedroom, bathroom, and kitchen have no openings but receive some natural light through gaps in the roof. The house receives ample natural light from the gap of the wall and the roof bamboo construction; however, its construction is in a very poor condition. The living conditions in the house are unsafe for all, but particularly hazardous for children.

3.7. House 7

The 7th house is occupied by the G. Family. The stunting case in this family is the special case because the kids that has a special condition of the heart valve disease. The condition of the kids is quite concerning, based on the information provided by the local child health facilitator coordinator and the child stunting data team in Tidung Island. The house, with a total floor area of 60 square meters, consists of a living room, two bedrooms, a storage room, a kitchen, and a bathroom, all of which are separate. In addition to its other functions, the kitchen area of this house is also use as an indoor drying space for laundry, so it makes the back area of the back part of the house has become damp.

This house has ample openings, reducing its reliance on artificial lighting. However, the floor is still bare concrete, and the walls are made of lightweight bricks without plaster. Similar to many other houses, this one lacks a ceiling, exposing occupants to the potential health risks associated with direct contact with asbestos.

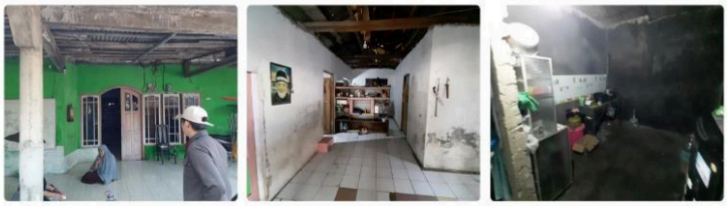


(a) (b) (c)

Figure 8. (a) Front of the house (b) family room (c) kitchen area (source: author)

3.8. House 8

The 8th house of this study is occupied by the H. Family This house, inhabited by a family of six, has a total floor area of approximately 74.2 square meters. The floor is tiled, and most of the walls are plastered. However, the ceiling is exposed to asbestos. The house features a spacious terrace, larger than those of the other 10 houses, used for teaching religious studies in the afternoons and evenings. Besides the terrace, there is a living room, three bedrooms, a kitchen, and two bathrooms. A rear exit is available, but windows are only found in the living room facing the terrace and a side section of the terrace facing the long hallway. The hallway, measuring 1.4 meters wide, serves as a rear exit and a storage area. Due to the lack of natural light sources within the house, it relies heavily on artificial lighting. Additionally, high humidity levels have resulted in mold growth on the interior walls.



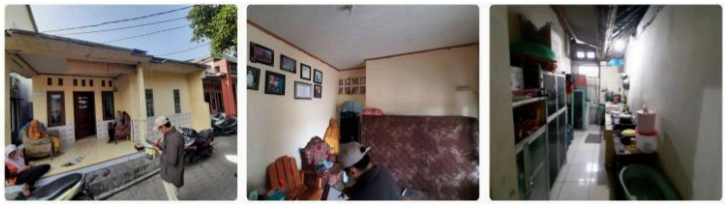
(a) (b) (c)

Figure 9. (a) alley of the house (b) 1st open to the front of the house (c) (source: author)

3.9 House 9

This house is occupied by the I Family. This 38.5 square meter house, home to four people, has two bedrooms, a living room, a bathroom, and a kitchen. The kitchen has a direct door leading to a one-meter-wide alley. Despite having numerous openings, some of which face the alley and permanently covered with paper to maintain privacy, the house still relies heavily on artificial lighting due to the limited use of natural light. All the condition mention before make this house feel damp and dark conditions in this house are causing mold to grow on the interior walls.

As previously explained, this house has many openings; however, some of them face the alley and cannot be opened directly as this would disturb people passing by. Additionally, these openings covered with permanent paper covers to prevent neighbors or passersby from looking into the house through the windows. Overall, although this house has quite a few openings, it still relies heavily on artificial lighting for illumination.

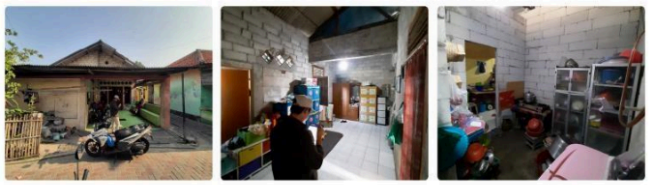


(a) (b) (c)

Figure 10. (a) front of the house (b) center of the house (c) kitchen area (source: author)

3.10. House 10

This house is occupied by J Family. This house is the largest among the houses included in this study. With an area of 84 m², it has a sufficient number of openings to accommodate its residents. The house features a terrace at the front, and the living room has a window facing the terrace, providing adequate lighting in the front part of the house. It also has three bedrooms, one kitchen with a separate dining area, and two bathrooms. Seven people reside here, with the facilities mentioned earlier; however, due to the large number of items in the back area and the limited openings there, the back part of the house is damp, with mold forming on the interior walls. Additionally, the back area still relies on artificial lighting. The house has ceramic flooring, but the walls are made of lightweight bricks that not plastered.



(a) (b) (c)

Figure 11. (a) Front of the house (b) the family room (c) kitchen area (source: author)

3.10. House 11

The last house is the smallest house among all the houses in this study where the K family lived. Built as an additional structure attached to the main house where the grandparents of this family reside. This house has 10.8 m² area but is used by four people—two adults and two school-aged children.

(a) (b) (c)

Figure 12. (a) view from kitchen to the outside area (b) the house condition (c) bedroom area (source: author)

The cleanliness of this house is less than ideal. As the picture show that kitchen, storage room, and laundry area only separated by thin wooden walls. The cooking area opens directly to the back of the house, which helps with natural lighting but is not ideal, as the cooking area only covered by a banner. The walls are also made of wood, which poses safety risks for the residents. Parts of the interior wooden walls are also damp, leading to mold growth on some sections

4. CONCLUSION

Previous research has indicated that the living environment influences the condition of stunting in children. Through this study, it was found that 11 homes of stunted children in Tidung Island had at least one indoor space with damp and moldy walls, despite the island's average temperature of 27°C - 32°C. This occurred because the houses studied had minimal openings and the windows were rarely opened due to concerns about stray cats entering the house. Five out of ten houses have minimal openings, and almost all occupants reported not actively using these openings due to concerns about the entry of stray cats and insects such as cockroaches and flies. The interviews report also expressed reluctance to open windows and doors due to the extremely hot weather. House number 11 occupied by K. Family was found in extremely unsanitary conditions, with the kitchen only separated by a thin wooden partition wall and a kitchen area whose walls are only covered by a banner.

As a suggestion related to the findings, further research can be conducted to observe in more detail the homes of stunted children in Tidung Island in the context of government-established healthy home standards. This can then be used as research results to help local governments realize the importance of paying attention to the health conditions of stunted children from their environment, especially their homes.

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