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Improving Basic Sanitation Focus on House Conditions, Clean Water, and Toilets in Dom Aleixo Post Administrative, Dili City, Timor-Leste, 2024

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Abstract

As a developing nation, Timor-Leste needs to enhance the quality of its water and sanitation. 87.80% of people had access to water sources, and 38% of people had better sanitary facilities. This goal is to examine basic sanitation with an emphasis on toilets, clean water, and home conditions. Methods: A cross-sectional, quantitative research strategy was used for the study. Data was gathered from 95 homes in seven sub-villages. Random sampling was used to choose the sample. Descriptive statistics made up the analytical data. According to this survey, Dom Aleixo Post Administrative, Dili Municipality, saw an average improvement in home conditions of more than 65%. Improved clean water access, namely the type of clean water pipe used, is 68.4%, and water availability is always good in both the rainy and dry seasons, 63.2%. The toilets used are adequate by 84.2%, the type of toilet used is water by 90.5%, the condition of the toilet is clean by 47.4%, and the water in the bathroom is sufficient by 76.8%. Improved housing conditions, drinking water sources, and toilets are important for all people. Therefore, policymakers must strengthen capacities and systems to enable all stakeholders to contribute effectively to increasing access to improved water and sanitation in communities.

Keywords: house condition, clean water, toilets, sanitation facilities, public health, public policy, Dili

INTRODUCTION

Universal access to clean water, sanitation, and hygiene (WASH), which are essential components of health and well-being and essential to a life of dignity, is called for by Sustainable Development Goal (SDG) 6 of the UN. Over 263 million people walk great distances to fetch water from rivers, streams, and lakes, and approximately 2 billion people worldwide lack access to clean water, despite the fact that sufficient WASH coverage is essential for enhancing quality of life. Additionally, at least 159 million people consume water that comes from contaminated sources (Crystal et al., 2024). In 2022, 2.2 billion people still lacked safely managed drinking water, and 115 million people still lacked access to safe drinking surface water and 3.5 billion people still lacked safely managed sanitation, ((Unicef) & (Who), 2023).

As a developing nation, Timor-Leste needs to enhance the quality of its water and sanitation. Improved Sanitation Facilities in Timor-Leste According to TLDHS 2003, the population's Improved Sanitation Facilities percentage is 18.8%, followed by 41.3% in

2010, 50.6% in 2013, 50.1% in 2016, and 38% in 2020. According to the data from TLDHS 2003, the population's access to water sources is 1.8%, 63.3% in 2010, 64.4% in 2013, 78.6% in 2016, and 87.80% in 2020 (TLDHS, 2003, 2010, 2016; TLFNS, 2013, 2020).

Sanitation is an endeavor to keep an eye on a number of physical environment elements in order to stop the development of human diseases, particularly those that have a negative impact on human life, health, and physical development. The supply of clean water, family latrine facilities, garbage disposal facilities, and wastewater disposal facilities are examples of basic sanitation, which is a set of environmental health standards that every household must have in order to meet their daily needs, (Fontes et al., 2023). Water is a chemical compound that is very important for life on Earth. A family latrine is a building used to dispose of and collect human waste (Fatima et al., 2024).

Given that poor sanitation disproportionately affects the poor, particularly the children in the poorest homes where we observe the highest prevalence of reversion to open defecation, the SDGs explicitly enunciate the equity viewpoint on sanitation. cleanliness programming, both globally and locally, is greatly impacted by the recent appearance of several pieces of research showing how crucial it is to reach threshold values of community cleanliness for health and nutrition outcomes (Cronin et al., 2017).

One of the requirements for environmental health is sanitation facilities, which every family should be aware of since, in accordance with health regulations, sanitation is a minimum necessity to provide a healthy environment. Sanitation facilities are also filmed for the supervision of various environmental factors that affect the degree of community health. Installing clean water, providing restrooms, disposing of effluent, and managing the facility are examples of sanitation facilities. A key component of promoting public health is sanitation. Poor sanitary conditions will negatively impact the beginning of life in the community's environment, with poor quality, contaminated water sources, the number of incidences of diarrhea, and other illnesses (Pacheco et al., 2024).

Research that comprehensively evaluates basic sanitation from an integrated perspective is still lacking, despite international efforts to increase access to water, sanitation, and hygiene. This is especially true when considering family environments in low-income, post-conflict countries like Timor-Leste. Few studies have offered disaggregated, community-level insights into how home conditions, clean water availability, and access to restroom facilities all impact basic sanitation outcomes, despite the fact that national-level data has tracked overall gains in water and sanitation access. Moreover, previous studies tend to isolate these components rather than exploring their interconnectivity. The novelty of this study lies in its comprehensive focus on three core pillars of basic sanitation—house structure, water source accessibility, and sanitation facility availability—within a localized context. This study aimed to determine the improved Basic Sanitation focuses on House Conditions, Clean Water, and Toilets in Dom Aleixo Post Administrative, Dili City, Timor-Leste, 2024.

RESEARCH METHOD

This study employed a quantitative design with a cross-sectional approach and was conducted over two weeks in Dom Aleixo Post Administrative. The sample consisted of 95 households selected through a simple random sampling technique, ensuring each household had an equal chance of being included to enhance the representativeness of the findings. To ensure the validity and reliability of data collection, the study utilized standardized survey tools embedded within the mWater Application, a digital platform widely used in WASH-related data collection for its geolocation accuracy and structured question formats. The questionnaire was pre-tested in a pilot study to ensure clarity and appropriateness for the target community. Data were analyzed using SPSS version 25, focusing on descriptive statistics to summarize the characteristics of house conditions, access to clean water, and toilet availability. The reliability of the data was reinforced by consistent interviewer training and daily monitoring of collected responses for completeness and accuracy.

RESULTS AND DISCUSSION

Table 1. Household Condition

Household Condition				
Window Ventilation	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Exist and works	74	77.9	77.9	77.9
Exists and does not work	6	6.3	6.3	84.2
Not exist	15	15.8	15.8	100.0
House Environmental				
Clean	63	66.3	66.3	66.3
Dirty	32	33.7	33.7	100.0
Chimney				
Exist and works	67	70.5	70.5	70.5
Not exist	28	29.5	29.5	100.0
Sewage drainage channel				
Water flows well	68	71.6	71.6	71.6
Poor water flow	27	28.4	28.4	100.0
Rubbish bin				
Exist and used	73	76.8	76.8	76.8
Exists and is not used	7	7.4	7.4	84.2
None	15	15.8	15.8	100.0
Total	95	100.0	100.0	

The results show that window ventilation exists and works at 77.9%, the House environment is clean at 66.3%, the Chimney exists and works at 70.5%, the Sewage drainage channel Water flows well at 71%, and the Rubbish bin exists and is used at 76.8%.

Table 2. Clean Water Facilities

Clean Water Facilities				
Type of Clean Water used	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Clean water pipe	65	68.4	68.4	68.4

Clean Water Facilities				
Type of Clean Water used	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Pump or well water	20	21.1	21.1	89.5
River or gutter water	10	10.5	10.5	100.0
Availability of water during the rainy season and the dry season				
Water is always available	60	63.2	63.2	63.2
In summer, the water discharge decreases	23	24.2	24.2	87.4
Water discharge has decreased for more than 3 months	12	12.6	12.6	100.0
The physical condition of water				
Water is colorless, odorless, and tasteless	70	73.7	73.7	73.7
The water is neither clean or calcareous	12	12.6	12.6	86.3
Water is colored, smells, and tastes	13	13.7	13.7	100.0
Distance to Water Source				
> 5 Meter	17	17.9	17.9	17.9
< 15 Meter	19	20.0	20.0	37.9
> 15 Meter	59	62.1	62.1	100.0
Water storage (bucket, traditional pot, etc.)				
Tightly closed	70	73.7	73.7	73.7
Covered with other objects	6	6.3	6.3	80.0
Not tightly closed	19	20.0	20.0	100.0
Total	95	100.0	100.0	

The Results of Clean Water Facilities show that the Type of clean water pipe used is 68.4%, Water is always available during the rainy season and dry season is 63.2%, The water conditions are colorless, odorless, and tasteless is 73.7%, Distance Access to Water Source > 5 meters is 17.9%, Tightly closed Water storage is 73.7%.

Tabel 3. Toilets

Toilets				
Have an adequate toilet	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Private Toilet	80	84.2	84.2	84.2
Public Toilet	5	5.3	5.3	89.5
None	10	10.5	10.5	100.0
Type of Toilet				
Used water	86	90.5	90.5	90.5
Waterless	9	9.5	9.5	100.0
Distance from the house to the septic tank				
> 10 meters	26	27.4	27.4	27.4
> 5 meters	32	33.7	33.7	61.1
< 5 meters	37	38.9	38.9	100.0
Toilet condition				
Clean	45	47.4	47.4	47.4
Dirty	50	52.6	52.6	100.0
Total	95	100.0	100.0	
Disabled access toilet.				
Access	27	28.4	28.4	28.4

Toilets				
Have an adequate toilet	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Unable to access	68	71.6	71.6	100.0
Have soap available in the toilet.				
Available	69	72.6	72.6	72.6
Only sometimes	13	13.7	13.7	86.3
Not Available	13	13.7	13.7	100.0
Water in the toilet is sufficient				
Sufficient	73	76.8	76.8	76.8
Not Sufficient	22	23.2	23.2	100.0
Total	95	100.0	100.0	

84.2% of the toilets were used adequately, 90.5% of the toilet type used water, 38.9% of the house was located less than five meters from the septic tank, 47.4% of the toilet was clean, 28.4% of the disabled could use the toilet, 72.6% of the toilet had soap available, and 76.8% of the toilet had enough water.

Discussions

Household Condition

The study's results show that window ventilation exists and functions at 77.9%, the home environment is clean at 66.3%, chimneys exist and function at 70.5%, sewage drains flow well at 71%, and trash bins exist and function at 76.8%.

Nearly 37% (95% CI: 36.4, 37.9) of households had access to basic sanitation facilities (Rukavishnikov et al., 2024). Using the dwelling infestation as the outcome and the household characteristics seen six months prior to the outcome as covariates, multiple and multilevel regression logistic analyses were performed, adjusting for time (seasonal and cyclical fluctuations of the vector) (Monroy-Dıaz et al., 2023).

High housing expenses, a lack of stable housing, frequent movements, subpar living conditions, and unsafe neighborhoods are all examples of housing-related problems that fall under the general heading of "housing insecurity." Even though safe, reasonably priced housing lays the groundwork for long-term health, there is a dearth of such housing (Cox et al., 2017; Fan et al., 2022). The households that better utilized improved sanitation, emphasized by several socio-demographic and economic factors such as age, educational status, marital status of household head, wealth index, household size, division, place of residence, and over periods (Ahmed et al., 2023).

Since basic sanitation is the bare minimum of infrastructure and amenities that every home must have, efforts to keep it in good condition are crucial for public health. The process of removing groundwater and surface water from a region is known as a drainage system. In order to prevent flooding or inundation that could endanger the health and well-being of its inhabitants, a settlement needs a strong drainage system. trash management is the process of collecting, storing, and disposing of trash in a way that doesn't harm the environment or public health (Fontes et al., 2023). Safely managed WASH services are commonly sought after and requested by women, as an area of life that they are often keen to participate in because access to clean water and sanitation is more pressing for them as they undertake the bulk of domestic labor and care work. Better access to WASH facilities would do much to improve the lives of the poorest women and

help raise their status in society (Tam, T., Vieira, A., Grant, M., Davis, I., Niner, S., Weking, E., Huggett, C., Leahy, C., and Willetts, 2022).

Clean Water

Generally speaking, everyone has a fundamental human right to better access to water. According to the results of clean water facilities, 68.4% of clean water pipes are of a certain type; 63.2% of water is always available during the rainy and dry seasons; 73.7% of water is colorless, odorless, and tasteless; 17.9% of water sources are more than five meters away; and 73.7% of water storage is tightly closed.

Human existence depends heavily on clean water, however maintaining water quality is necessary to prevent health risks to the general public. By using clean water, we can prevent intestinal worms, skin conditions, cholera, dysentery, typhoid, diarrhea, and poisoning. Three primary needs must be met by clean water: bacteriological, chemical, and physical requirements (Anatolia S.M. Exposto et al., 2021).

Safely managed water is stored in a narrow-mouthed, closed lid to prevent contamination and is considered a protective factor against waterborne diseases. To expand the concept of safe water management and get a broader pool of data, we considered narrow-mouthed and closed lids in our exposure categories (Kim et al., 2023). Eighty-nine percent of the participants had access to basic drinking water, and 56% had basic drinking water access 'always available' (24 hours a day) (Rukavishnikov et al., 2024). Providing good quality water in sufficient quantities is a major global challenge. Village residents more often use underground water sources (centralized and non-centralized) (Rukavishnikov et al., 2024). Water, sanitation, and hygiene (WASH) practices are crucial for individual and community health. Access to safe drinking water, proper sanitation facilities, and consistent hygiene habits encompasses necessities for mitigating the spread of diseases, improving overall well-being, and strengthening health policy implementation (Okesanya et al., 2024). The impact of poor wastewater management showed that most of the children in these communities have suffered from diarrhea (73.8%), and in the rainy season, there is a high possibility of infection with waterborne diseases (Ximenes et al., 2024). Efforts to strengthen the WASH system in Timor-Leste have been undertaken by CSOs (such as the INGO WaterAid) looking to work with, influence, and engage the WASH system at all levels, including several levels of government (from the national to the village level), utilities, businesses, and local CSOs (Grant et al., n.d.).

Seasons and significant weather events were used to assess water stress. The findings demonstrate that people's perceptions and understandings of climate change as it affects water stress are greatly influenced by their age and length of local residency. Women suffer greatly as a result of having to go great distances to fetch drinking water for the home during dry seasons (Rukavishnikov et al., 2024). Persistent inequities in water access are driven by interconnected factors such as poverty, governance, gender, and infrastructure. Implementing integrated solutions is crucial, with a shift from problem identification to evaluating contextualized interventions across sectors. Dedicated implementation research is needed to translate knowledge into action, advancing water security and achieving Sustainable Development Goal 6 in the region (Osisiogu et al., 2024).

The researcher wishes to compare the findings of this study with those of other researchers mentioned above, who demonstrate that window ventilation, a clean indoor environment, a chimney, effective wastewater drainage, and a garbage dump are all important factors in preventing the spread of Dengue disease.

Toilets or Latrine

The study found that the toilets used an adequate toilet 84.2%, Type of Toilet used water 90.5%, the Distance from the house to the septic tank <5 meters is 38.9, Toilet condition is clean 47.4%, Disabled can access the toilet 28.4%, Have soap available in the toilet 72.6%, and Water in the toilet is sufficient 76.8%.

The United Nation's Sustainable Development Goal (SDG) 6 calls for universal access to clean water, sanitation, and hygiene (WASH), which are crucial elements of health and well-being and fundamental for a life in dignity(Crystal et al., 2024).

The general latrine coverage pooled across 23 studies was an average of around 70% of households had access to a latrine, 72% of latrine-owning households used them, and 55% of latrines were improved latrines, meaning that they contained at least bare solid slabs assumed to separate excreta from human contact (Novotný & Mamo, 2022). Maintenance and repair of septic systems, including septic tanks and drain fields, are critical to their safe and efficient performance and the health of their users. When septic systems are not properly maintained, they can malfunction and release untreated waste into the surrounding environment, which can lead to sanitation-related illnesses (Kryston et al., 2024).

The toilet location was a critical determinant of perceived security and must be adequately addressed when building new facilities. The sole availability of facilities may be insufficient to prevent diarrheal infections. People must also be safe when using them. Further attention should be directed toward how the built environment affects safety (Pessoa Colombo et al., 2023). Basic sanitation facilities include clean water installation, availability of toilets, wastewater disposal facilities, and facility management. Sanitation is an important element in supporting public health. Poor sanitary conditions will harm the beginning of life in the environment of the community with poor quality, contaminated water sources, the number of incidences of diarrhea, and other illnesses (Pacheco et al., 2024).

CONCLUSION

Improving the availability of restrooms, access to clean drinking water, and housing conditions are all critical to improving the health and well-being of the community. The government of Timor-Leste should put specific infrastructure plans into place, such maintaining and growing clean water distribution networks, especially in areas with high population densities like Dili Municipality where access is still unequal. To guarantee water safety, it is essential to invest in community-based water treatment facilities and conduct routine inspections and maintenance on clean water pipes. Additionally, the prevalence of watery illnesses like cholera and diarrhea would be considerably decreased by enhancing the fundamental sanitation infrastructure, which includes appropriate drainage systems, approved waste disposal locations, and public awareness campaigns. To improve long-term sustainability, policymakers should also think about including the

promotion of sanitation and hygiene into national health and education initiatives. A more efficient and inclusive approach to WASH concerns will be made possible by enhancing institutional capacity and coordination among stakeholders, including NGOs, health professionals, and local authorities. Long-term, it is anticipated that these initiatives will enhance health outcomes, reduce childhood morbidity, minimize public health expenses, and help achieve Sustainable Development Goal 6 on clean water and sanitation.

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