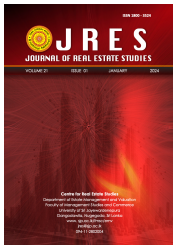

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The Living Conditions of Boarding Houses around the University of Sri Jayewardenepura

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ABSTRACT

The research aims to assess the living conditions of boarding houses around the University of Sri Jayewardenepura. Internal dimensions, light, ventilation and room space were used to measure living conditions in boarding houses. The study employed a mixed-method approach to gather data. Descriptive and content analysis methods were used to analyse the data collected using a purposive sample of 70 boarding houses and interviews with 10 owners. The findings of the study revealed mixed results regarding the living conditions of boarding houses. Overcrowding is a major issue that led to most of the boarding houses failing to meet the minimum space requirements for tenants, leading to compromised living conditions. The study provides insights that can help policymakers to enhance regulations and standards to improve the well-being of the tenants.

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1. INTRODUCTION

Boarding houses are residential buildings where boarders rent individual or shared rooms and share common facilities such as kitchens, living rooms, and meals (Oktavallyan et al., 2021). These boarding houses offer temporary and long-term housing options for those seeking low-cost housing or community living. However, boarding houses often have poor living conditions, as many do not meet safety and hygiene standards (Mubita et al., 2022). Consequently, there is a pressing need for a robust regulatory system to address these issues and ensure better living conditions for tenants.

Building regulations, also known as construction codes, are enforced by local authorities or building control agencies to ensure that structures are safe, healthy, and sustainable for occupants and the larger community (International Code Council, 2020; Kumar & Garg, 2014). These regulations are crucial for maintaining the structural integrity of buildings, ensuring safety, and promoting the well-being of occupants.

In Sri Lanka, a few studies have

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investigated the living conditions of boarding houses and regulatory compliance (Kaluthanthri, 2014). Such studies can provide valuable insight into the extent of the problem, the potential impact on tenants' well-being and the solutions to improve the living conditions of boarding houses (Mubita et al., 2022).

The University of Sri Jayewardenepura is currently experiencing a dramatic increase in the number of student enrollment. Additionally, these boarding houses around the University of Sri Jayewardenepura accommodate not only students but also working individuals. This demand has raised the need for more accommodations and at the same time, more individuals are converting their houses to boarding places as a source of income (Kaluthanthri, 2014). The high demand, limited supply, and higher profit orientation have created issues regarding the living conditions of these boarding houses.

Accordingly, this study investigates the living conditions of boarding houses around the University of Sri Jayewardenepura, located in the Maharagama Urban Council area, which was designated as an urban development area on April 15, 2002. Under Urban Authority Law No. 41 of 1978. The Urban Development Authority's (UDA) planning and development regulations are applied to this location. These regulations include specific guidelines for building construction, maintenance, and occupancy standards to ensure safe and habitable living conditions. In addition to local UDA regulations, the study considers relevant international standards to provide a comprehensive assessment of residential quality. This dual approach offers valuable insights for policymakers, urban planners, and stakeholders in the building and housing sectors, highlighting areas where local practices can be aligned with global best practices.

2. LITERATURE REVIEW

Boarding houses are residential buildings where boarders rent individual or shared rooms and share common facilities such as kitchens, living rooms, and meals (Oktavallyan et al., 2021). These boarding houses offer temporary and long-term housing options for those seeking low-cost housing or community living. However, boarding houses often have poor living conditions, as many do not meet safety and hygiene standards (Mubita et al., 2022).

There are several studies done in the context of boarding houses, building regulations and standards. Mubita et al. (2022) studied safety and health risks in student boarding houses in Lusaka City in Zambia. This study mostly discussed poor ventilation, fire safety, overcrowding, and inadequate sanitary infrastructure. However, they do not specifically discuss building regulations and standards, which govern poor ventilation, fire safety, overcrowding, and sanitary infrastructure. Oktavallyan et al. (2021) released a healthy boarding house design as a case study near the University of Bengkulu. Brilliantes et al. (2012) studied the living conditions of university students in boarding houses and dormitories in Davao City, Philippines.

In Sri Lankan context, Kaluthanthri (2014) discussed the adherence of building regulations by boarding house owners. This also references to Wijerama Grama Niladari Division, Maharagama Urban Council Area where the University of Sri Jayewardenepura is located. This study discusses poor ventilation, fire safety, overcrowding, and inadequate sanitary infrastructure.

Violations of building regulations often arise due to complex and technical codes, lack of awareness, and inadequate

enforcement, especially in developing countries while economic constraints, insufficient inspection, and self-regulation further exacerbate the issue. Consequences include poor construction quality, safety hazards, and increased vulnerability to natural disasters (Boggs & Dragovich, 2006; Iwaro & Mwasha, 2010; Thiruppugazh, 2008). As an example from the international context, Brilliantes et al. (2012) mentioned that the majority of dormitories and boarding houses in the Philippines have poor facilities and poor living conditions. Many operators have violated the standards of the Philippine Building Code. Further, the study highlighted the main reasons for the violation of the building code including incomplete completion of requirements, expired permits, and insufficient enforcement by monitoring officers (Nobis, 2022).

Several studies have investigated the impacts of living conditions on students' well-being and highlighted that poor living environments negatively impact students' ability to study. Additionally, discussed how poor building regulations or violations have impacts on the overall structure, and cause risks to the mental and physical health of residents (Haseeb et al., 2011; Maqsood & Schwarz, 2010). As a solution for building regulation violations, the literature suggests the establishment of specific building regulations for boarding houses, and the establishment of a Boarding House Committee to oversee licensing and supervision (Nobis, 2022; Haseeb et al., 2011; Maqsood & Schwarz, 2010).

2.1 Building Regulations & Standards

Building regulations are a collection of laws and codes that define design, construction, and maintenance standards for buildings. They include safety, structural stability, accessibility, health, and environmental impact, among others. Local governments or national government agencies are typically responsible for enforcing regulations, and failure of compliance can result in legal consequences such as fines or imprisonment (International Code Council, 2020; Kumar & Garg, 2014; Lanka Property Web, 2021; The World Bank Group, 2020).

In Sri Lanka, the historical context of the building regulations began with the Housing and Town Improvement Ordinance of 1915, which was a significant legislative milestone in Sri Lanka, marking the beginning of formalized urban planning and housing standards. This ordinance aimed to improve sanitary conditions, ensure public health, and regulate building construction and maintenance. It established early standards for urban development, mandating adequate ventilation, lighting, and spatial requirements to promote healthy living conditions. These regulations laid the groundwork for current urban development policies and set a precedent for building safety and habitability standards (Laws of Sri Lanka, 2014).

Building regulations are essential for achieving good living conditions. They ensure that buildings are safe and habitable, provide adequate light and ventilation, and maintain structural integrity. These regulations aim to protect the health, safety, and welfare of occupants and the general public. By setting minimum standards for construction and maintenance, building regulations help prevent hazards such as fire, structural collapse, and poor indoor air quality. Additionally, they promote accessibility for individuals with disabilities and encourage sustainable building practices that reduce environmental impact (International Code Council, 2020). These regulations are continually updated to address emerging challenges and incorporate advancements in building technology and practices, ensuring that urban development keeps pace with contemporary needs and

standards.

The current regulatory framework in Sri Lanka, UDA oversees the implementation of building regulations, while the Municipal Council enforces these regulations at the local level. The UDA's planning and development regulations are crucial in maintaining urban standards and ensuring compliance with national building codes. There are numerous local building regulations; however, this study focuses on the internal dimensions of a room, light, and ventilation regulations. These specific regulations are chosen because most studies highlight them as essential for ensuring good living conditions (Kumar & Garg, 2014; Kaluthanthri, 2014). Table 1 shows local building regulations including the internal dimensions, Light and ventilation.

In Sri Lanka, there are no specific regulations regarding the amount of space required per person in a room which is a crucial aspect in determining the living conditions of boarding houses. Adequate room space is necessary for daily activities, furniture placement, and ensuring free movement, which helps prevent overcrowding and promotes health and safety (Ibrahimy et al., 2023). As a result, this study referred to the Architects' Data Book by Neufert et al. (2012). The Neufert Architect's Data Book, especially its fourth edition published in 2012, is a comprehensive guide detailing universal standard body measurements and space requirements. It offers a vast array of information on dimensions related to human activities and ergonomics, essential for designing functional and comfortable living and working environments. The book covers various aspects, including minimum room sizes, furniture layout, and clearance spaces necessary for efficient movement and use.

Accordingly, this study selected to apply the room space standards from the Neufert Architect's Data Book due to the absence of specific regulations in the UDA guidelines. These standards provide a benchmark for ensuring that living conditions are safe and comfortable. Universal Standard Body Measurements and Space Requirements used in the study are shown in Table 2.

Table 1: Sri Lankan Regulations and Standards used in the study

Internal Dimensions
Floor Area & Width Regulations for Residential Building

The UDA law, no. 41 of 1978
Development Authority Planning & Development Regulations 2021.
Regulation No.65 ***(Schedule 7 of Form E)***

Regulations or Standards	Regulations or standards are violated, if
a. Where there is only one room in a dwelling unit, the minimum floor area should be 11 m² and the minimum width should be 3 m.	a. Floor space is less than 11 m² or the width is less than 3 m of the only room in a dwelling unit.
b. Where there is more than one room in a dwelling unit, **i. First Room should have a 9.5 m² minimum floor area and 2.5 m minimum width.**	b. Where there is more than one room in a dwelling unit, i. Reduces the required floor area of 9.5 m² or the minimum width of 2.5 m in the first room.

ii. Additional Rooms should have an 8.5 m^2 minimum floor area and 2.5 m minimum width.	ii. Reduce the required floor space to 8.5 m^2 and the minimum width to 2.5 m.

Internal Dimensions
Height Regulations for Residential Buildings
The UDA law, no. 41 of 1978
Development Authority Planning & Development Regulations 2021.
Regulation No.67 (1) a.

Regulations or Standards	Regulations or standards are violated, if
A room in residential construction must have an average height of 2.8 m and a minimum height of 2.4 m at the lowest point for living rooms, bedrooms, and kitchens.	The room height is less than 2.4 m at its lowest point.

Light Regulations for Residential Buildings
The UDA law, no. 41 of 1978
Development Authority Planning & Development Regulations 2021.
Regulation No.70 (3)

Regulations or Standards	Regulations or standards are violated, if
The size of windows or openings in a building for natural light and ventilation to a room or space shall not be less than 1/5 of their floor area. **The floor area of such a room or space, at least half of such openings or windows, must be openable.**	The windows and openings in a room or space are less than 1/5 of its floor area. The windows or openings are not 50% openable.

Ventilation Regulations for Residential Buildings
The UDA law, no. 41 of 1978
Development Authority Planning & Development Regulations 2021.
Regulation 70 (5) a. b. c.

Regulations or Standards	Regulations or standards are violated, if
Every such window or opening must be openable to one of the following: **a. An area that opens to the sky; or** **b. A public road or street from which the building has right of way; or** **c. A courtyard, open space, or Air well placed within the building.**	Windows or openings are not open to the sky, public road or street, courtyard, open space, or air well placed within the building.

Source: Urban Development Authority Planning & Development Regulations, (2021)

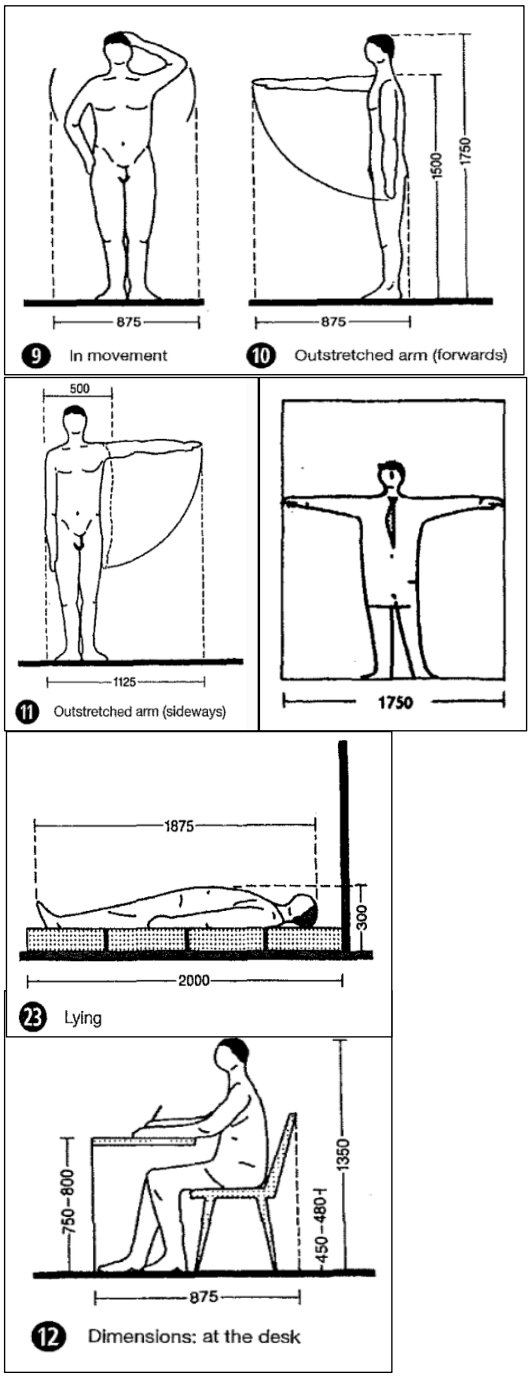
Table 2: Universal Standards

Room Space **Required space for daily activities** *Neufert Architects' Data Book* ***(Fourth Edition) (Page No.28)*** ***The Universal standard Body measurements and space requirements***	
Regulations or Standards	**Regulations or standards are violated, if**
A person in motion needs at least 875 mm of room (figure 1).	There is no 875 mm space between the person moving and the object.
Persons with outstretched arms (forwards) require at least 875 mm (figure 1).	There is no 875 mm room for persons to extend their arms (forwards).
The sideways outstretched arm requires a minimum of 1125 mm space (figure 1)	There is no 1125 mm gap between the person with outstretched arms (forwards.
Dimensions: A minimum of 875 mm space is required at the desk (figure 1).	There is no 875 mm space between the person and the sideways outstretched arm.
A person in a laying position requires 1875 mm of space.	There is no 1875 mm space for a person to lie.
Room Space **Required space between walls** ***Neufert Architects' Data Book (Fourth Edition) (Page No.29)*** ***The Universal standard Body measurements and space requirements***	
Regulations or Standards	**Regulations or standards are violated, if**
A person requires 875 mm of space to move comfortably between walls (> =10% increase for individuals moving) (figure 2).	There is no 875 mm space for a person to move comfortably between walls.
Two people next to each other require 1150 mm of space between walls (figure 2).	There is no 1150 mm spacing between walls for two people who are next to each other.
Three people next to each other require 1700 mm of space between walls (figure 2).	There is no 1700 mm spacing between walls for three people who are next to each other.
The distance necessary between walls for four persons is 2250 mm (figure 2).	There is no 2250 mm spacing between walls for four people who are next to each other.

Source: Neufert et al., (2021)

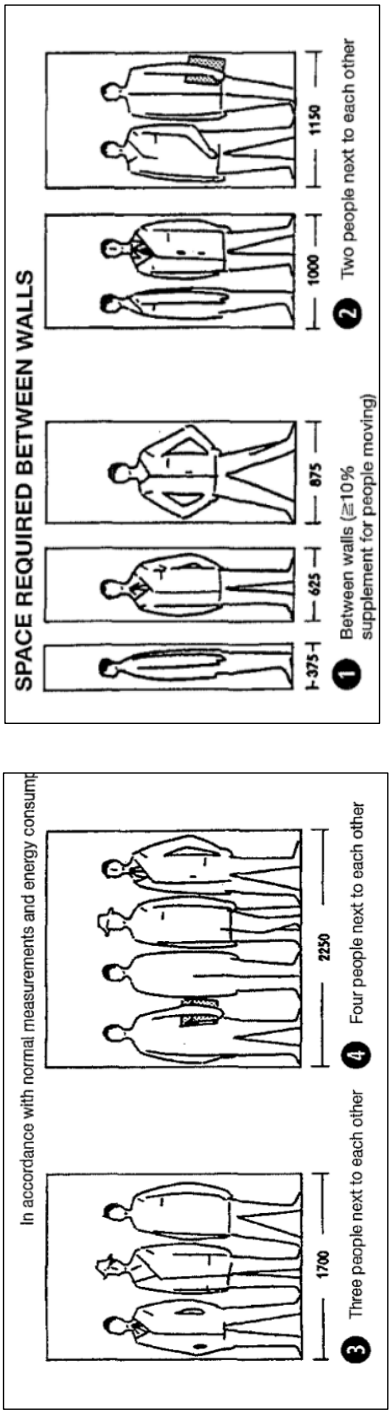
The universal standard body measurements and space requirements are shown in figure 1 and figure 2.

Figure 1: The Universal Standard Body Measurements and Space Requirements



Source: Neufert Architects' data (2021)

Figure: Space Required Between Walls



Source: Neufert Architects' data (2021)

2.2 Define the Variables

Internal Dimensions

Accurate internal dimension measuring entails determining the width, height, and floor area within a building. The study used the width, the horizontal distance between walls that allows for adequate movement and accessibility and the height is the vertical distance between the floor and the ceiling. These dimensions contribute to the overall comfort and functionality of the area. Measuring internal dimensions involved comparing the actual dimensions of a room with the UDA regulatory standards (International Code Council, 2020; Kumar & Garg, 2014).

Light and Ventilation

The evaluation of light and ventilation focuses on maintaining a healthy indoor environment. The intensity of sunshine that enters the space through windows and openings is quantified in natural light measurement. The measurement of ventilation measures the airflow and air exchange inside the area. Proper ventilation is critical for maintaining healthy indoor air quality and avoiding problems like moisture buildup and stale air. These measurements aid in identifying issues such as improper window placement, insufficient natural light, and poor air circulation. Building regulations typically specify minimum requirements for window sizes, ventilation openings, and airflow rates to ensure adequate light and ventilation in residential buildings. Measuring light and ventilation involved comparing the actual status of a room with the UDA regulatory standards (Kumar & Garg, 2014; Lanka Property Web, 2021).

Room Space

This assessment considers the amount of space necessary for daily activities, furniture placement, and movement. Adequate room space eliminates overcrowding and enables efficient and safe operation. Adequate room space is a crucial aspect of housing quality, as it directly influences the usability and comfort of living areas. Measuring room space involves comparing the actual dimensions of a room with the Universal standard Body measurements and space requirements.

3. METHODOLOGY

The objective of this study is to determine the living conditions of boarding houses, with special reference to internal dimensions, light, ventilation, and room space, as well as to understand the causes of violations from the owners' perspective (similar to Brilliantes et al., 2012). This study focuses on the suburban area of Gangodawila-Nugegoda, specifically boarding residences around the University of Sri Jayewardenepura. The selection of an 800-meter radius for this study is based on standard walkability metrics, which suggest that a person can comfortably walk half a mile (approximately 804 meters) in 10 minutes (City Park Blog, 2017; Layton, 2017; Walker, 2011). This distance is considered convenient for daily commutes, making it an ideal range to assess the living conditions of boarding houses within a practical and accessible distance from the University of Sri Jayewardenepura. In addition, the selection of this area is driven by the high demand for student accommodation, as the proximity to the university is highly convenient for students (Dissanayake, 2011). Boarding house owners in this area often aim to maximize their profits by accommodating as many tenants as possible, sometimes at the expense of living conditions. This situation provides a relevant and critical context for investigating compliance with building regulations and the resultant living conditions (Kumar & Garg, 2014;

Kaluthanthri, 2014).

A mixed-method approach was used in this study. In the first phase, a quantitative approach was utilized to determine the living conditions within 70 boarding houses, designated as boarding units in this investigation. These boarding units were selected using purposive sampling to ensure a representative sample of the area within walking distance of the university. Data collection for this phase involved site observations, site inspections, and document analysis (Alele & Malau-Aduli, 2023; Busetto et al., 2020; Jamshed, 2014). The descriptive analysis method was used to analyse the first phase of the study.

The second phase of the study involved a qualitative approach, focusing on in-depth interviews with 10 boarding house proprietors. These interviews were conducted using semi-structured questionnaires, allowing for detailed and flexible responses. The interviews, each lasting between 10 to 15 minutes, aimed to understand the proprietors' perspectives on the causes of violations and their knowledge of building regulations. The content analysis method was employed to analyse the interview responses...

4. DATA ANALYSIS

4.1 Determine the living conditions

The objective of this research is to determine the living conditions of boarding houses using internal dimensions, light, ventilation, and room space regulations and standards.

Internal Dimensions

The study reveals that 21 out of 70 boarding units have first rooms with 71% adhering to floor area regulations and 29% violating them. 81% of these units archived the width regulation, while 19% violated it. 49 of the 70 units are additional rooms, with 35% archiving the floor area regulation and 65% violating it. 45% archived the width regulation, while 55% violated it. 91% archived the height regulation, while 9% violated it. The UDA recommends that a single-room dwelling unit should have 11m² floor area and 3m width. However, the sample lacks a single dwelling unit with only one room, making conclusions difficult. The study also found that 65% of additional rooms violated floor area regulations and 55% did not meet the width requirement (Refer to Table 3).

According to the observations, the researcher discovered (refer to Figure 3) that they used plywood sheets to partition their rooms to provide more boarding units. As a result, boarding units did not comply with building codes. Only 9% of the 70 boarding units violated the height requirement. Tenets' health and well-being suffer as a result of these violations.

Figure 3: Visual Examples of Space Overutilization

Boarding Unit 02

Boarding Unit 04

Source: Author (2024)

Light and Ventilation

This study found that 53% of 70 boarding units have windows that are less than one-fifth of their floor area, with 47% of them archiving 1/5 of their floor area. 97% of these windows can be opened at least 50% of their size, while 3% cannot be opened at all. 84% of these windows are open to the road, open space, or sky, while 16% are open to another building. The size of windows or openings in a building for natural light and ventilation must not be less than one-fifth of the floor area, and at least half of these openings must be openable. 16% of the windows do not open to open spaces or roads, leading to poor ventilation and causing other buildings to be affected. There is no healthy and well-beneficial environment in the boarding unit without proper lighting and ventilation (Asikainen et al., 2012, 2013; Escombe et al., 2019; Nall et al., 2019). (Refer to Table 4).

Room Space

According to Neufert et al. (2012), man's body measurement needs some space to do day-to-day work, and should have a minimum of 875 millimetres of space for a person in motion in a room or outstretched arms to forward or the ability to move comfortably between walls. However, 20% of the 70 boarding units lacked 875 millimetres of space. Researchers can conclude from this finding that the boarding units are uncomfortable and unhealthy. Half of the 70 boarding units lacked 1125 millimetres of outstretched arms to Sideways. 29% of the 70 boarding units lacked 875mm of desk space because the standard bed length is 2000 millimetres, and all boarding units archived 2000 millimetres of space for people to lie down. Half of the 70 boarding units did not have 1150 millimetres between walls for two people next to each other. 83% of the 70 boarding units lacked 1700 millimetres of space between walls for three people next to each other, while 96% lacked 2250 millimetres of space between walls for four people next to each other. However, more than half of the boarding units had three to four tenants, and there was insufficient space in the boarding units and only available space between walls was measured, leaving furniture spaces out. According to Lourenco et al. (2011), these overcrowded boarding units can seriously affect the tenets' physical and mental health (Refer to Table 5). Figure 4 depicts the overcrowding of boarding units. There were 4 to 6 beds in the small single room.

Figure 4: Visual Examples of Overcrowding of Boarding Units

Boarding Unit 02

Boarding Unit 14

Boarding Unit 31

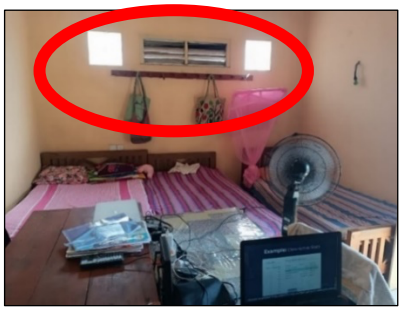
Boarding Unit 47

Boarding Unit 48

Source: Author (2024)

Figure 5 shows a violation of the light and ventilation regulations. The size of openings or windows should be 1/5 of the floor area. But there was none in this room.

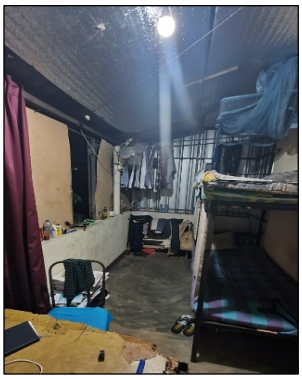
Figure 5: Visual Example of Violation of the Light and Ventilation Regulation.



Source: Authors (2024)

Figure 6 depicts a boarding unit that was converted from a rear balcony to a room.

Figure 6: Visual Example of the Conversion of Rear Balcony to Boarding Unit



Source: Authors (2024)

4.2 Causes of poor living conditions

The causes for poor living conditions can be identified as a lack of awareness and knowledge of building regulations, lack of government intervention and challenges to complying with building regulations.

Firstly, concerning awareness and knowledge of building regulations, the research indicates varied levels of understanding among respondents. Some proprietors demonstrated familiarity with local regulations when constructing their homes, relying on building plans or advice from professionals. Building proprietor (BP01) revealed "Yes, the house was built with a 6-foot side space and a 25-foot distance from the road. Data was obtained from the Maharagama Urban Council. But there may no longer be 25 feet from the road because I added another part to the building". However, a significant portion (5 respondents) remained unaware of the regulations and highlighted a need for improved dissemination of information and education within the industry. BP02 revealed that "There is no way to know the regulations."

Government intervention emerged as a significant factor influencing compliance with building regulations. The findings reveal a split among respondents regarding the presence and impact of

government inspections and guidance. The majority of the respondents (8 respondents) reported that their homes were inspected by government officials, receiving advice or directives to align their properties with existing regulations. For instance, Building Proprietor 01 (BP01) mentioned, "Indeed, they did visit. I also possess a Certificate of Conformity (CoC)." Additionally, BP01 mentioned receiving guidance from the electricity board to install an external staircase, indicating proactive advice to meet regulatory requirements.

In contrast, the other two respondents indicated a lack of official oversight. Building Proprietor 02 (BP2) stated, "No. They aren't," highlighting the absence of government inspections. Similarly, Building Proprietor 09 (BP9) confirmed, "No one comes to see the house," underscoring a significant gap in regulatory enforcement. This lack of inspection may lead to violations and substandard living conditions. However, the inconsistency in government inspections, as evidenced by the mixed responses, points to a need for more uniform and thorough oversight to ensure compliance with regulations. Therefore, strengthening governmental involvement and ensuring uniform enforcement are critical steps towards achieving comprehensive compliance with building standards.

Finally, the data reveals that economic constraints heavily impact the ability of property owners to adhere to building codes. For instance, Building Proprietor 06 (BP06) highlighted the financial burden of compliance by stating, "Yes. setting another window cost me twice as much because I had to break down a wall to install a new window." The financial strain is further exacerbated by the need for extensive renovations, which many proprietors find economically unfeasible.

In conclusion, the analysis of challenges to complying with building regulations reveals a complex interplay of economic and informational barriers. Financial constraints, particularly in the context of an unstable economic environment, significantly hinder proprietors' ability to meet regulatory requirements. The evolving nature of building codes adds an additional layer of difficulty, necessitating continuous adaptations that many proprietors cannot afford. Furthermore, the uneven access to regulatory information exacerbates compliance challenges, suggesting a need for more effective information dissemination strategies. Addressing these challenges requires a multifaceted approach that includes financial support mechanisms, stable economic policies, and improved communication channels for regulatory updates.

Table 3: Internal Dimensions Analysis

Criteria	Number of Boarding Units	Regulations Achieved Percentage	Regulations Violated Percentage
UDA Planning & Development Regulations (2021)			
Internal Dimensions			
There is Only One Room in a Dwelling Unit			
Floor Area = 11 m^2	0	-	-
Width = 3 m	0	-	-
There are More Than One Room in a Dwelling Unit.			
First Room			

Floor Area = 9.5 m²	21	71%	29%
Width = 2.5 m	21	81%	19%
Additional Rooms			
Floor Area = 8.5 m²	49	35%	65%
Width = 2.5 m	49	45%	55%
Height	70	91%	9%

Source: Author (2024)

Table 4: Light and Ventilation Analysis

Criteria	Number of Boarding Units	Regulations Achieved Percentage	Regulations Violated Percentage
	Light & Ventilation		
Light			
Floor Area x 1/5	70	47%	53%
50% Openable	70	97%	3%
Ventilation			
Openable to Road or Open Space	70	84%	16%

Source: Authors (2024)

Table 5: Room Space Analysis According to Neufert Architects' Data Book (Fourth Edition)

Criteria	Number of Boarding Units	Criteria Achieved Percentage	Criteria Violated Percentage
A person in motion needs at least 875 mm of room.	70	80%	20%
Persons with outstretched arms (forwards) require at least 875 mm.	70	80%	20%
Sideways outstretched arm requires a minimum of 1125 mm space.	70	50%	50%
A minimum of 875 mm space is required at the desk.	70	71%	29%
A person in a lying position requires 2000 mm of space.	70	100%	0%
A person requires 875 mm of space to move comfortably between walls.	70	80%	20%
Two people next to each other require 1150 mm of space between walls.	70	50%	50%
Three people next to each other require 1700 mm of space between walls.	70	17%	83%
The distance necessary between walls for four persons is 2250 mm.	70	4%	96%

Source: Author (2024)

5. DISCUSSION

The findings related to compliance of internal dimensions of boarding houses around the University of Sri Jayewardenepura reveal a mixed outcome. The data shows that 91% of the boarding units met the minimum height requirement, and substantial violations were observed in terms of floor area and width. Specifically, 71% of first rooms complied with the floor area regulation, leaving 29% in violation, and 81% adhered to width regulations, with 19% not meeting the standard. Related to additional rooms, 65% failed to meet the floor area requirement and 55% did not achieve the minimum width (Refer to Table 3). These findings align with previous research (Mubita et al., 2022).

Light and ventilation requirements in the boarding houses around the University of Sri Jayewardenepura highlight significant non-compliance with the one factor of light floor area x 1/5 and compliance with other factors: 50% openable, and openable to road or open space. According to the data, 53% of the boarding units fail to meet the requirement: windows should constitute at least one-fifth of the floor area, which is crucial for ensuring adequate natural light. Although 97% of windows are capable of being opened at least 50% of their size, ensuring some level of ventilation, 16% do not open to an appropriate open space such as a road, courtyard, or the sky, which impedes proper air circulation (refer to table 4). Adequate natural light and ventilation are critical for maintaining a healthy and comfortable indoor environment. Poor lighting and ventilation have been associated with various health issues, including respiratory problems, eye strain, and psychological stress (Asikainen et al., 2013; Escombe et al., 2019). Insufficient natural light increases dependency on artificial lighting, thereby raising energy consumption and costs, while poor ventilation can lead to the buildup of indoor pollutants and moisture, fostering environments conducive to mould growth and other hazards (Nall et al., 2019; Escombe et al., 2019). The regulations stipulate that windows and other openings should provide both sufficient natural light and ventilation to ensure a healthy living environment. The results indicate that a significant number of boarding houses comply with these standards, and very few have compromised the tenants' living conditions in this regard.

The room space required for daily activities in the boarding houses reveals higher compliance with the standards. According to the Neufert Architects' Data Book, specific spatial requirements are essential for comfort and functionality within residential spaces (Neufert et al., 2012). The study found that only 20% of the 70 boarding units lack the minimum 875 millimetres of space needed for a person in motion, and half of the units do not provide the required 1125 millimetres for sideways outstretched arms. The data also show that only 29% of the boarding units do not meet the 875 millimetres of space requirement for desk use. Meanwhile, all units provide the standard 2000 millimetres of space for lying down. However, the space between walls for multiple occupants is severely lacking. Specifically, 83% of the units do not provide the necessary 1700 millimetres for three people, and 96% fall short of the 2250 millimetres required for four people. Non-compliance with these standards is mainly due to overcrowding in the boarding houses, which can lead to physical discomfort and elevate the risk of health issues (refer to Table 5). According to Lourenco et al. (2011), overcrowded spaces can lead to both physical health problems, such as respiratory issues due to poor air circulation, and mental health issues, including stress and anxiety caused by the lack of personal space.

Further, the findings highlight several key factors contributing to violations of building regulations and standards in

boarding houses from owners' perspectives. Firstly, there is a notable variation in the awareness and knowledge of building regulations among proprietors. While some demonstrate familiarity with local regulations during the construction phase, a significant number remain unaware of the building regulations. This indicates a pressing need for enhanced dissemination of information and education within the industry to ensure compliance. Government intervention plays a crucial role in regulatory adherence. The research shows that half of the respondents received inspections and guidance from government officials, which helped align their properties with regulations. However, the other half reported a lack of official oversight, pointing to the necessity for more consistent and proactive governmental involvement to enforce compliance effectively.

In conclusion, the research points out the multifaceted causes of building regulation violations, including gaps in awareness, inconsistent government intervention, and financial challenges. Addressing these issues requires a comprehensive approach that includes improved education and information dissemination and more regular and thorough government inspections. Such measures are essential to ensure that boarding houses meet safety and quality standards, thereby enhancing the living conditions for tenants.

6. CONCLUSION

The study aimed to investigate the living conditions of boarding houses and provide insights to policymakers for enhancing boarding house regulations and standards. Through the comprehensive analysis, the study identified that in general boarding houses have compliance with the considered regulations and standards. They are first room floor area and width, additional room height, 50% openable, openable to a road or open space, a person in motion needs at least 875 mm of room, persons with outstretched arms (forwards) require at least 875 mm, sideways outstretched arm requires a minimum of 1125 mm space, a minimum of 875 mm space is required at the desk, a person in a lying position requires 2000 mm of space, a person requires 875 mm of space to move comfortably between walls, and two people next to each other require 1150 mm of space between walls. Meanwhile, significant non-compliance can be identified with the following regulations and standards: additional rooms floor area and width, floor area into1/5 for light regulation, sideways outstretched arm requires a minimum of 1125 mm space, two people next to each other require 1150 mm of space between walls, three people next to each other require 1700 mm of space between walls, and the distance necessary between walls for four persons is 2250 mm. Addressing these issues is crucial for improving the living standards and well-being of boarding house residents. Boarding house owners revealed that insufficient knowledge of regulations, ineffective government intervention, and financial challenges are the main reasons for non-compliance with building regulations. The findings highlight the requirement of addressing these regulatory gaps and enforcement mechanisms to ensure adequate living conditions for tenants such as improved dissemination of regulatory information, and consistent government oversight are essential steps to enhance the living standards in boarding houses and promote the well-being of their occupants.

The study's scope was limited by time constraints, data collection difficulties, and the lack of local regulations and standards for boarding houses in Sri Lanka. Data collection difficulties were also exacerbated by the unwillingness of some boarding house owners to allow observations or share information. The

absence of local regulations or standards specific to boarding houses in Sri Lanka further impacted the study's scope and depth.

Future researchers can direct their studies to understand tenant perspectives on living conditions of boarding houses that can help shape policies and regulations. Additionally, future research can focus on capturing health issues related to the non-compliance of building regulations and standards.

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