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(RESEARCH ARTICLE)

To characterize the impact of water and sanitation inadequacies among common population and in the academic environment: Prospective observational study

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Abstract

One of the most important needs of an individual was sanitation. This study was a six-month community-based prospective observational study that used a pre-designed questionnaire form. The study's goal was to assess the effects of inadequate water and sanitation facilities on the general public and academic environment. The findings showed that participants lacked adequate facilities, which can lead to serious health issues. This article aims to discuss the factors and consequences that contribute to the use of contaminated water and inadequate sanitation facilities.

Keywords: Water, Sanitation, And Hygiene (WASH) Facilities; Urinary Tract Infection; Cleanliness; Quality of Water; Health Problems; Socioeconomic Backgrounds.

1. Introduction

Sanitation refers to the provision and facilities for the safe disposal of human urine and faeces. . The United Nations (UN)-Global Analysis and Assessment of Sanitation and Drinking Water GLASS [44] found that around 1 billion people conduct open defecation (in 90% of rural regions), and 2. 5 billion people lack access to adequate sanitation. Adequate hygiene was not maintained in the absence of adequate water and sanitation facilities. Access to water and sanitary facilities affects academic performance in two ways: dehydration degrades short-term memory and cognitive function, and water-related diseases like cholera and typhoid etc. . Consequently, academic performance is impacted [1] . Water, sanitation, and hygiene (WASH) facilities were lacking in educational settings, which lowers student performance and increases the risk of numerous diseases [2] . The most frequent health issues linked to poor sanitation and unclean water were diarrheal and gastrointestinal diseases. These were major concerns in low-income areas. Inadequate waste management, unclean or neglected restrooms, and a lack of basic supplies like soap and clean water discourage children from using the facilities and increase their risk of getting infections [3] . The purpose of this study was to evaluate the effects of water and sanitation deficiencies in the academic setting and among common populations that might had a detrimental effect on the well-being of the respondents. We aimed to determine the impact of inadequate water and sanitation facilities through this investigation. .

Objective

The objective of the study was to characterize the impact of water and sanitation inadequacies among common population and in the academic environment including school and various courses like pharmacy and nursing in Thiruvalla taluk ,Pathanamthitta district Kerala.

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2. Material and methods

A community -based prospective observational study was conducted to assess the impact of water and sanitation inadequancies , among 403 participants (123 from school,120 from college,160 from common population) in Thiruvalla, Kerala. The study approved by the Institutional Review Board of Nazareth College of Pharmacy, Othera, Thiruvalla . The study was conducted between December 2024 – May 2025. Participants aged between 10-85 were included and excluded those unwilling to participate, those unable to read and write. After obtaining consent, data was collected using a semi structured questionnaire which had been validated. Data collection form was given to obtain sufficient data and awareness was given to improve the sanitation related quality of life among the individuals. The data thus obtained was assessed statistically to assess the impact of poor sanitation. Data were analyzed using Microsoft Excel.

3. Results

3.1. Assessment of cleanliness of washroom

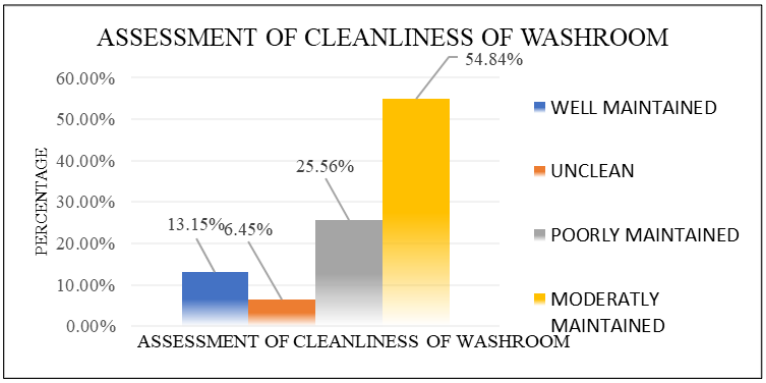

Figure 1 Distribution of assessment of cleanliness of washroom

The graph illustrates the distribution of cleanliness ratings for washrooms among 403 participants. A majority,221 participants (54. 84%), assessed the facilities as moderately maintained. Approximately 103 participants (25. 56%) rated them as poorly maintained, while 53 participants (13. 15%) considered them well-maintained. Only 26 participants (6. 46%) found the washrooms unclean. These results suggest that while most participants perceive the washrooms as adequately maintained, a significant portion identifies areas needing improvement.

3.2. Quality of water used in institutions

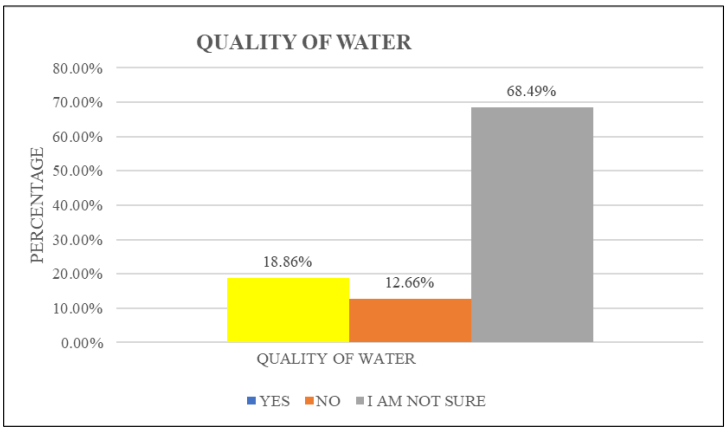

Figure 2 Distribution of quality of water

The graph depicts the perceptions of 403 participants regarding the quality of water Among them, 276 participants (68. 49%) were uncertain about the water quality, 89 participants (22. 08%) believed it was of good quality, and 51 participants (12. 66%) felt it was not of good quality. These findings suggest a significant level of uncertainty among students about the water quality on campus.

3.3. Quality of water inspected on regular basis

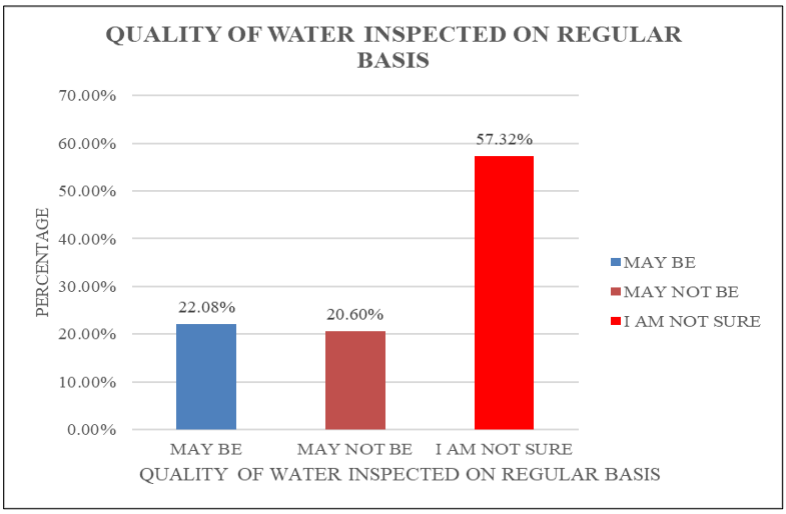

Figure 3 Distribution of quality of water inspected on regular_basis

The graph presents participants' perceptions regarding the regular inspection of water quality in their institution, revealing that 231 out of 403 respondents (57. 32%) were uncertain, 89 (22. 08%) believed inspections might occur, and 83 (20. 60%) felt inspections might not be conducted.

3.4. Poor sanitation a cause of UTI

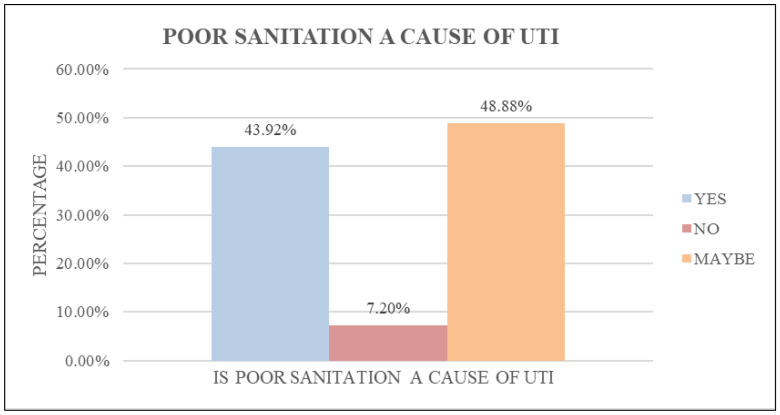

Figure 4 To assess whether poor sanitation a cause of UTI

The graph highlights the proportion of participants who revealed poor sanitation was a major contributor to Urinary Tract Infections (UTI). Out of 403 participants, 177 participants (43. 92%) firmly believed that poor sanitation was the major cause of urinary tract infections, 29 participants (7. 20%) did not believe there was any connection, while 197 participants (48. 88%) participants felt it might be a possible cause.

4. Discussion

This study aimed to characterize the impact of poor sanitation between those aged 10-85 , studying in school, colleges and among common population using questionnaire. The results showed that the majority of participants'; restrooms were not well maintained (Figure1), which could lead to serious health problems. [Figure 2] showed that participants were unsure about the water's quality, and [Figure 3] showed that most participants were similarly uncertain about the consistency of water quality inspections. The supplied water must be contaminant-free and pathogen-free. Educational institutions should get drinking water that satisfies both national and WHO drinking water quality requirements. As part of a regular surveillance and control program, the environment health authority should be involved in evaluating the microbiological quality of water [4] . [Figure 4] highlight's , most participants believed that poor sanitation is a major contributor to Urinary Tract Infections. Globally, urinary tract infections (UTIs) are prevalent infectious disorders that

have an effect on clinical practice and public health [5]. These illnesses affect people of all ages, but because of the physiological, hormonal, and behavioral aspects of this crucial developmental time, they are especially dangerous for teenagers. Adolescents from poorer socioeconomic backgrounds may encounter extra difficulties, such as restricted access to sanitary facilities and clean water, which increases the risk [6] [7][8] .

Abbreviations

UTIs: Urinary Tract Infections, UN-united Nations.

5. Conclusion

Hence through this study it revealed that inadequate sanitation can negatively impact on the urinary system. In academic environments, inadequate sanitary facilities and a lack of privacy inhibit good hygiene, particularly in schools and colleges. Students are more likely to get Urinary Tract Infections (UTIs) as a result, especially teenage girls who might not be able to maintain proper menstruation and personal cleanliness. Inadequate cleanliness of washrooms can also contribute to Urinary Tract Infection. Ensure that children's health, well-being, and education are supported by safe water, sanitation, and hygiene in schools.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There were no conflicts of interest to reveal.

Statement of informed consent

All of the study's subjects gave their informed consent.

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