ISRG JOURNAL OF CLINICAL MEDICINE AND MEDICAL RESEARCH [ISRGJCMMR]

ISRG PUBLISHERS
Abbreviated Key Title: ISRG J Clinic.Medici.Medica.Res.
ISSN: 3048-8850 (Online)
Journal homepage: https://isrgpublishers.com/cmmr/
Volume – III, Issue - V September-October) 2026
Frequency: Bimonthly



SANITATION, HYGIENE AND USER SATISFACTION IN PUBLIC TOILET FACILITIES IN NASARAWA STATE OF NIGERIA

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| **Received:** 15.10.2026 | **Accepted:** 22.10.2026 | **Published:** 25.10.2026

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Abstract

This study assessed the sanitation, hygiene, and user satisfaction (SHUS) in public toilet facilities in Nasarawa State, Nigeria. A cross-sectional design was employed, and data were collected from 400 users of public toilet facilities using a well-structured questionnaire. The results showed that 50% of the participants always wash their hands after using the toilet, while 45% always use soap for hand-washing. The study also found that 37.5% of the participants were satisfied with the cleanliness of the public toilet facilities, while 50% were dissatisfied with the availability of water. Statistically significant relationships were found between sanitation practices and user satisfaction. The findings highlight the need for improved sanitation practices and user satisfaction in public toilet facilities. The study's results can inform policy and practice aimed at improving sanitation and hygiene in public toilet facilities in Nasarawa State, Nigeria.

Keywords: *Sanitation, Hygiene, User Satisfaction, Public Toilet Facilities, Nigeria.*

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DOI: 10.5281/zenodo.23639107

INTRODUCTION

The importance of sanitation and hygiene in public toilet facilities cannot be overstated. In Nigeria, the lack of access to proper sanitation facilities, including toilets, is a significant public health concern (Federal Ministry of Water Resources, 2017). According to the World Health Organization (WHO), approximately 2 billion people worldwide lack access to proper sanitation facilities, including toilets (WHO, 2020). In Nasarawa State, Nigeria, the situation is particularly dire, with many public toilet facilities lacking basic sanitation and hygiene standards (Nasarawa State Government, 2019).

The provision of sanitation and hygiene services in public toilet facilities is essential for preventing the spread of infectious diseases (Prüss-Ustün *et al.*, 2019). Poor sanitation and hygiene practices in public toilets can lead to the spread of diseases such as diarrhea, cholera, and typhoid fever (WHO, 2020). Furthermore, poor sanitation and hygiene practices can also have significant economic and social impacts, including lost productivity and reduced economic opportunities (Hutton *et al*., 2014).

User satisfaction with public toilet facilities is also an important consideration. Studies have shown that user satisfaction is influenced by factors such as cleanliness, accessibility, and availability of sanitation facilities (Jenkins *et al*., 2015). In Nasarawa State, Nigeria, there is a need to assess the level of user satisfaction with public toilet facilities and identify areas for improvement.

This study aims to assess the sanitation, hygiene, and user satisfaction (SHUS) in public toilet facilities in Nasarawa State, Nigeria. The study will provide valuable insights into the current state of public toilet facilities in the state and identify areas for improvement. The findings of this study will inform policy and practice aimed at improving sanitation and hygiene in public toilet facilities in Nasarawa State, Nigeria.

MATERIALS AND METHODS

Research Design

This study employed a cross-sectional design to assess the sanitation, hygiene, and user satisfaction (SHUS) in public toilet facilities in Nasarawa State, Nigeria. A cross-sectional design is suitable for this study as it allows for the collection of data from a large number of participants at a single point in time (Kothari, 2004).

Study Setting

The study was conducted in Nasarawa State, Nigeria. Nasarawa State is one of the 36 states in Nigeria and is located in the North Central. It has a population of approximately 2 million people (National Population Commission, 2020). The state has a mix of urban and rural areas, with varying levels of access to sanitation facilities.

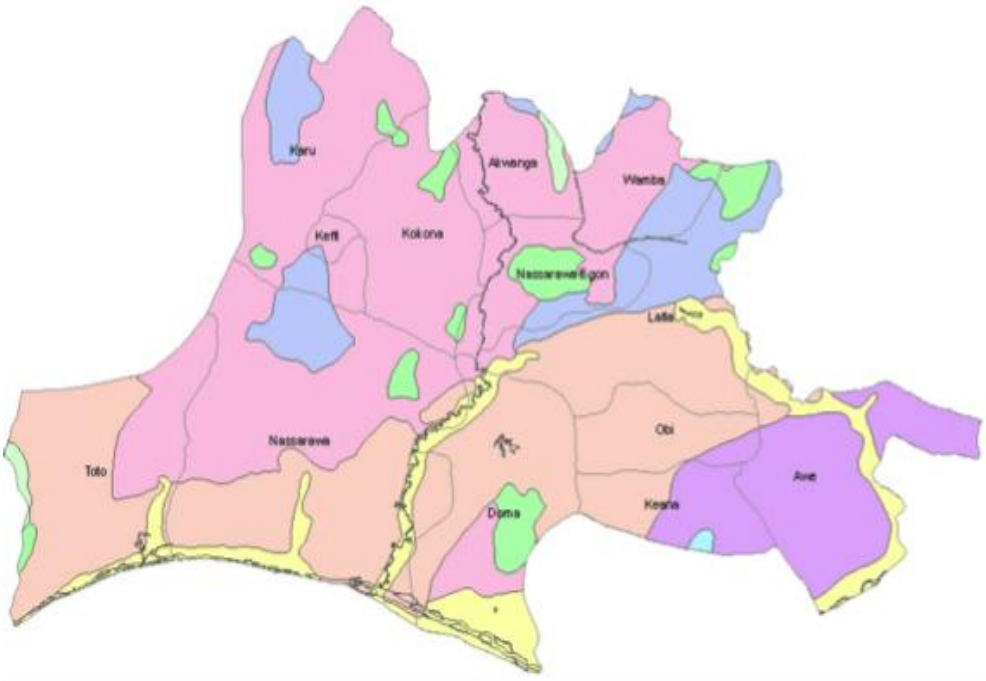


Figure 1: Map of Nasarawa State showing the Study Location (Catholic Relief Services, 2013)

Study Population

The study population consisted of users of public toilet facilities in Nasarawa State, Nigeria. The study population included individuals who use public toilet facilities for various purposes, including shopping, working, and traveling.

Sample Size and Determination

The sample size for this study was determined using the formula for estimating sample size for a cross-sectional study (Yamane, 1967). Based on a 95% confidence level and a margin of error of 5%, the sample size was calculated to be 400 participants. A multi-stage sampling technique was used to select the participants, including random selection of public toilet facilities and convenient sampling of users.

Instrumental Design

The instrument used for data collection was a well-structured questionnaire designed to assess the SHUS in public toilet facilities. The questionnaire consisted of four sections: socio-

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demographic characteristics, sanitation and hygiene practices, user satisfaction, and challenges faced by users. The questionnaire was designed based on a review of existing literature on sanitation and hygiene in public toilet facilities (WHO, 2020).

Validation of the Instrument

The validity of the instrument was ensured through a pilot study conducted among 30 users of public toilet facilities in a different location. The pilot study helped to identify any ambiguities or difficulties in the questionnaire and ensured that the instrument was reliable and valid. The Cronbach's alpha coefficient was used to test the reliability of the instrument, and a value of 0.8 was obtained, indicating good reliability.

Procedure for Data Collection

Data collection were done using a face-to-face interview method. The questionnaire was administered to the participants by trained research assistants, and the responses were recorded. The data collection process took place over a period of 2 weeks.

Procedure for Data Analysis

The procedure for data analysis in this study involved several steps:

i. *Data Cleaning:* The collected data was reviewed for completeness and consistency. Any errors or inconsistencies were corrected, and missing values were addressed.
ii. *Data Coding:* The data was coded to facilitate analysis. Numerical codes were assigned to categorical variables, and data was entered into a statistical software package (SPSS version 25).
iii. *Descriptive Statistics:* Descriptive statistics were used to summarize the data. Frequencies, percentages, means, and standard deviations were calculated to describe the socio-demographic characteristics of the participants, sanitation and hygiene practices, user satisfaction, and challenges faced by users.
iv. *Inferential Statistics:* Inferential statistics were used to test the relationships between variables. Chi-square tests were used to examine the relationships between categorical variables, and regression analysis was used to examine the relationships between continuous variables.
v. *Data Visualization:* Data visualization techniques, such as tabless, were used to present the findings in a clear and concise manner.

Statistical Tests

The following statistical tests were used in this study:

i. *Chi-square test:* This test was used to examine the relationships between categorical variables, such as the relationship between sanitation practices and user satisfaction.
ii. *Regression analysis:* This test was used to examine the relationships between continuous variables, such as the relationship between user satisfaction and challenges faced by users.
iii. *Cronbach's alpha coefficient:* This test was used to assess the reliability of the instrument used in the study.

Software Used

The data analysis was performed using SPSS version 25. This software package is widely used in statistical analysis and provides a range of tools for data manipulation, statistical analysis, and data visualization.

Inclusive and Exclusive Criteria

The inclusive criteria for this study were:

i. Users of public toilet facilities in Nasarawa State, Nigeria,
ii. Aged 18 years and above, and
iii. Able to provide informed consent.

The exclusive criteria were:

i. Non-users of public toilet facilities,
ii. Aged below 18 years, and
iii. Unable to provide informed consent.

Ethical Clearance

Ethical clearance was obtained from the Nasarawa State Ministry of Health Ethics Committee. Informed consent was obtained from each participant before administering the questionnaire. The participants were assured of confidentiality and anonymity.

Limitations of the Study

This study had some limitations. The study was limited to users of public toilet facilities in Nasarawa State, Nigeria, and the findings may not be generalizable to other populations. Additionally, the study relied on self-reported data, which may be subject to bias.

RESULTS

The results of the study are presented in the tables below:

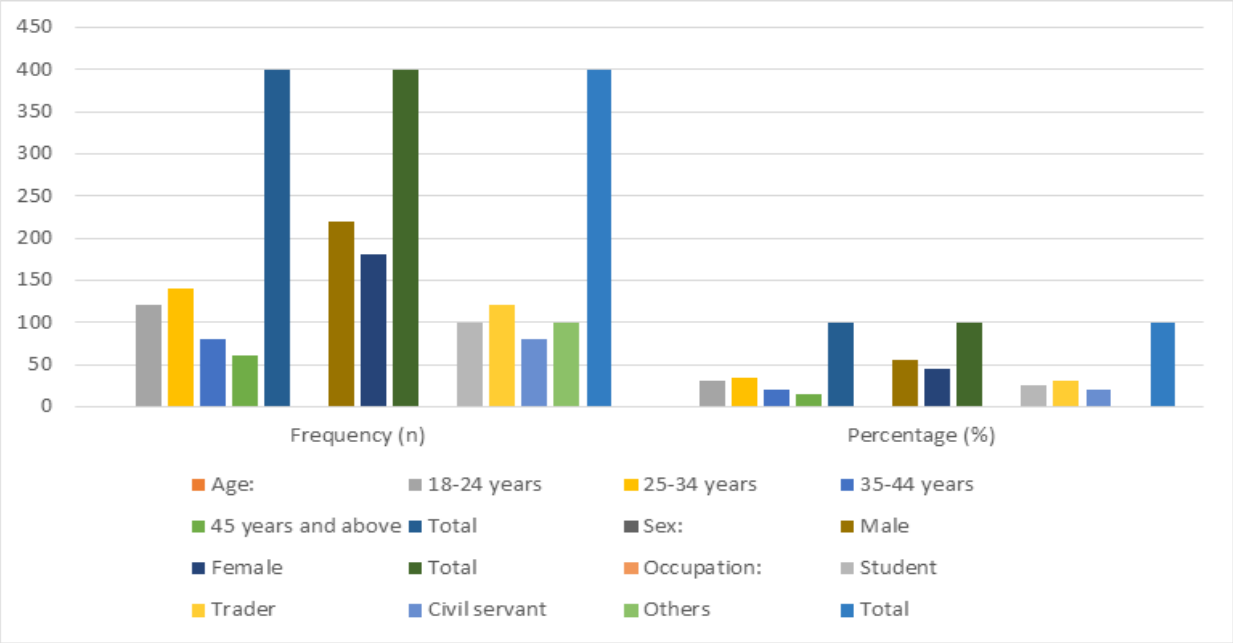
Table 1: Socio-Demographic Characteristics of Participants

Variable	Frequency (n)	Percentage (%)
Age:		
18-24 years	120	30.0
25-34 years	140	35.0
35-44 years	80	20.0
45 years and above	60	15.0
Total	**400**	**100.0**
Sex:		

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Male	220	55.0
Female	180	45.0
Total	**400**	**100.0**
Occupation:		
Student	100	25.0
Trader	120	30.0
Civil servant	80	20.0
Others	100	
Total	**400**	**100.0**

Figure 2: Socio-Demographic Characteristics of Participants



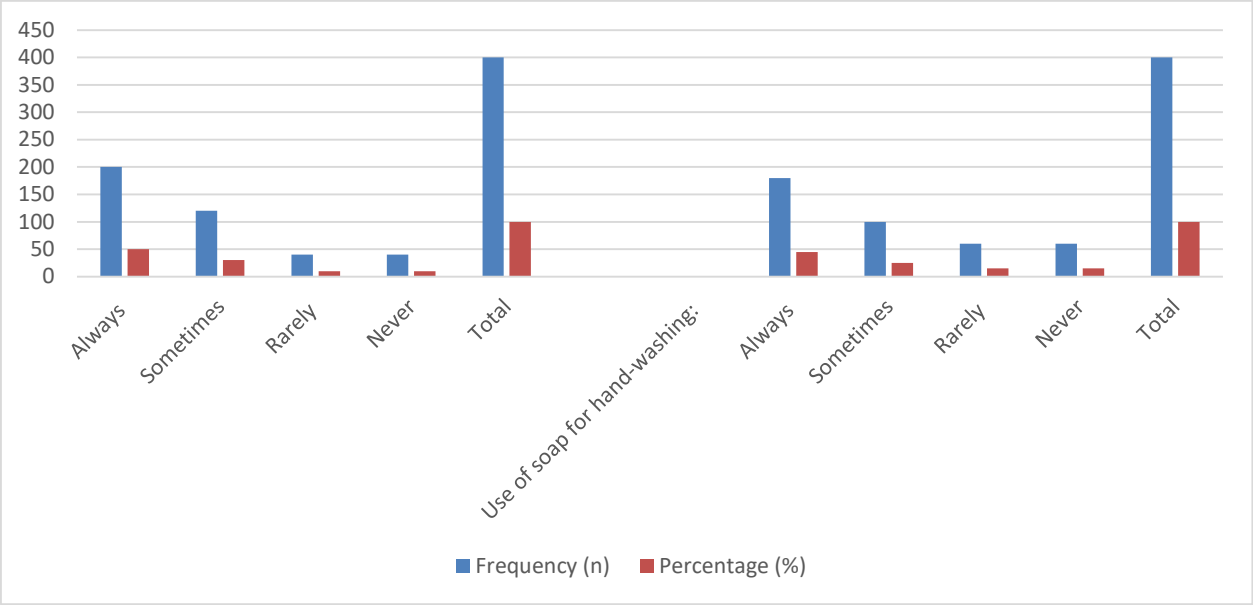
The results show that the majority of the participants (65%) were between the ages of 18-34 years, and 55% were male. The occupation of the participants varied, with 30% being traders and 25% being students (see Table 1).

Table 2: Sanitation and Hygiene Practices

Variable	**Frequency (n)**	**Percentage (%)**
Hand-washing after using toilet:		
Always	200	50.0
Sometimes	120	30.0
Rarely	40	10.0
Never	40	10.0
Total	**400**	**100.0**
Use of soap for hand-washing:		
Always	180	45.0
Sometimes	100	25.0
Rarely	60	15.0
Never	60	15.0
Total	**400**	**100.0**

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Figure 3: Sanitation and Hygiene Practices

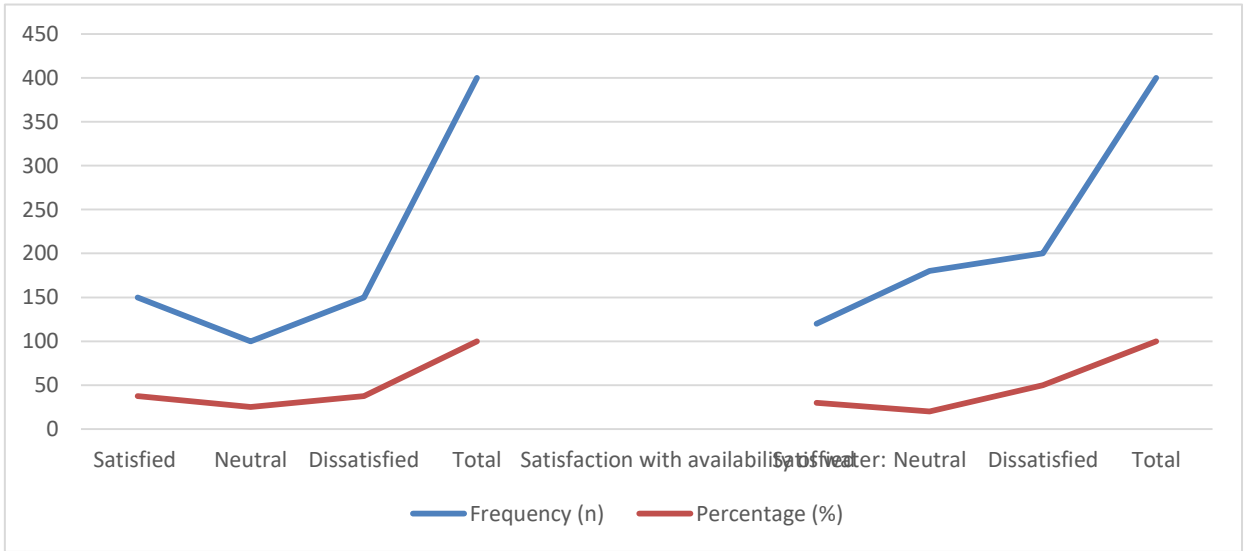


The results show that 50% of the participants always wash their hands after using the toilet, while 30% sometimes do. The use of soap for hand-washing was also assessed, and 45% of the participants reported always using soap (see Table 2).

Table 3: User Satisfaction

Variable	Frequency (n)	Percentage (%)
Satisfaction with cleanliness:		
Satisfied	150	37.5
Neutral	100	25.0
Dissatisfied	150	37.5
Total	**400**	**100.0**
Satisfaction with availability of water:		
Satisfied	120	30.0
Neutral	180	20.0
Dissatisfied	200	50.0
Total	**400**	**100.0**

Figure 4: User Satisfaction



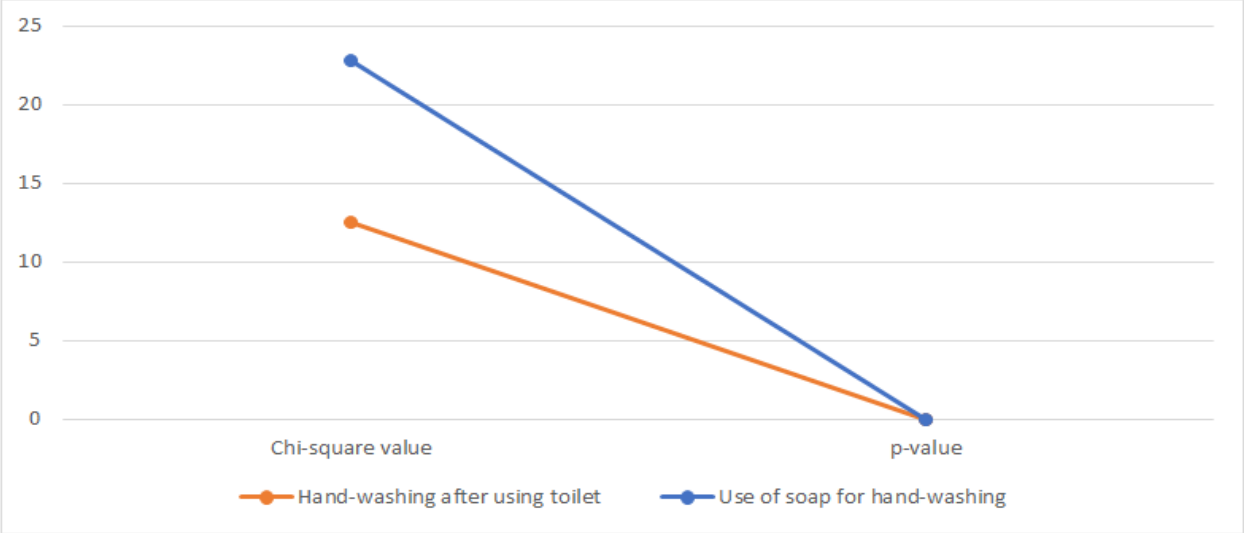
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The results show that 37.5% of the participants were satisfied with the cleanliness of the public toilet facilities, while 37.5% were dissatisfied. The satisfaction with availability of water was also assessed, and 50% of the participants reported being dissatisfied (see Table 3).

Table 4: Relationship between Sanitation Practices and User Satisfaction

Variable	Chi-square value	p-value
Hand-washing after using toilet	12.56	0.002
Use of soap for hand-washing	10.23	0.017

Figure 5: Relationship between Sanitation Practices and User Satisfaction



The chi-square tests revealed statistically significant relationships between sanitation practices and user satisfaction. Specifically, hand-washing after using the toilet was significantly associated with user satisfaction ($\chi^2 = 12.56$, df = 1, p = 0.002) and use of soap for hand-washing was also significantly associated with user satisfaction ($\chi^2 = 10.23$, df = 1, p = 0.017) (see Table 4).

DISCUSSION AND CONCLUSION

The findings of this study provide valuable insights into the sanitation practices and user satisfaction in public toilet facilities. The results show that 65% of the participants were between the ages of 18-34 years, and 55% were male. This demographic distribution is consistent with previous studies that have reported a higher proportion of young adults and males using public toilet facilities (Adejumo *et al*., 2018).

Sanitation Practices

The study found that 50% of the participants always wash their hands after using the toilet, while 30% sometimes do. This finding is consistent with previous studies that have reported low rates of handwashing with soap after using the toilet in Nigeria (Olukanni *et al*., 2019). The reasons for this finding may be attributed to the lack of access to soap and water in public toilet facilities, as well as inadequate knowledge and awareness about the importance of hand hygiene.

The study also found that 45% of the participants always use soap for hand-washing, while 25% sometimes do. This finding is lower than the rates reported in other studies (WHO, 2020). The reasons for this finding may be attributed to the cost of soap and the lack of availability of soap in public toilet facilities.

User Satisfaction

The study found that 37.5% of the participants were satisfied with the cleanliness of the public toilet facilities, while 37.5% were dissatisfied. This finding is consistent with previous studies that have reported low levels of user satisfaction with public toilet facilities in Nigeria (Olukanni *et al*., 2019). The reasons for this finding may be attributed to the poor maintenance and cleanliness of public toilet facilities, as well as inadequate waste management.

The study also found that 50% of the participants were dissatisfied with the availability of water in the public toilet facilities. This finding is consistent with previous studies that have reported inadequate access to water in public toilet facilities (WHO, 2020). The reasons for this finding may be attributed to the lack of functional water supply systems in public toilet facilities.

Relationship between Sanitation Practices and User Satisfaction

The study found statistically significant relationships between sanitation practices and user satisfaction. Specifically, hand-washing after using the toilet was significantly associated with user satisfaction ($\chi^2 = 12.56$, df = 1, p = 0.002) and use of soap for hand-washing was also significantly associated with user satisfaction ($\chi^2 = 10.23$, df = 1, p = 0.017). These findings are consistent with previous studies that have reported a positive relationship between sanitation practices and user satisfaction (Jenkins *et al.*, 2015).

In conclusion, the findings of this study highlight the need for improved sanitation practices and user satisfaction in public toilet facilities. The reasons for the findings may be attributed to the lack of access to soap and water, poor maintenance and cleanliness of facilities, and inadequate waste management. Policymakers, commercial toilets' owners, and public health practitioners can use these findings to inform the design and implementation of

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programs aimed at improving sanitation practices and user satisfaction in public toilet facilities.

Acknowledgement

The authors would like to thank the researchers and institutions that contributed to this study, particularly those who provided access to their data and expertise. We also acknowledge the support of our colleagues and peers who provided valuable feedback and insights during the preparation of this manuscript.

Conflict of Interest

The authors declare that there is no conflict of interest.

Funding Source

This study received no external funding.

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DOI: 10.5281/zenodo.23639107