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Visitors' Environmental Consciousness and Satisfaction with Beach Cleanliness at Eleko and Elegushi Beaches, Lagos State, Nigeria

Adewumi, Janet Adedoyin[1]; Titiloye, Tayo Oluwaseyi[1]*; Osaji, Miracle Nnema
[1]Department of Ecotourism and Wildlife Management, Federal University of Technology, Akure, Ondo State, Nigeria

Abstract
Beach cleanliness is an important component of coastal tourism quality because litter can affect environmental conditions, visitor experience and perceptions of destination quality. This study examined visitors' environmental consciousness and satisfaction with beach cleanliness at Eleko and Elegushi Beaches in Lagos State, Nigeria. Data were collected from beach visitors using a structured questionnaire. Descriptive statistics were used to assess visitors' environmental consciousness, while chi-square analysis examined relationships between socio-demographic characteristics and environmental satisfaction/consciousness. Correlation analysis was used to determine the association between visitors' satisfaction with beach cleanliness and their environmental consciousness. The findings showed differences in reported environmental-consciousness indicators between Eleko and Elegushi. At Eleko Beach, the mean scores for use of waste bins, participation in environmental education, and adherence to anti-littering signage were 2.64, 2.29 and 1.66, respectively, while the corresponding values at Elegushi were 4.43, 4.09 and 2.63. Income was the only socio-demographic characteristic significantly associated with visitors' environmental satisfaction and consciousness ($p = .047$). Among the satisfaction indicators, signage prohibiting littering was significantly associated with visitors' satisfaction with beach cleanliness ($p = .001$), whereas waste-bin adequacy, staff cleaning, environmental education and regular waste disposal were not statistically significant. The correlation between satisfaction and environmental consciousness was very weak at both Eleko ($r = .0515$) and Elegushi ($r = -.0233$). The findings indicate that improving physical cleanliness alone may not automatically produce stronger environmental consciousness among visitors. Beach managers should therefore combine visible environmental infrastructure with targeted education, behavioural communication and enforcement.

Keywords: environmental consciousness; beach cleanliness; visitor satisfaction; beach litter; coastal tourism; Eleko Beach; Elegushi Beach; Lagos State

1. Introduction

Coastal and marine destinations provide recreational, aesthetic, cultural and economic benefits, making environmental quality an important component of tourism competitiveness and visitor experience (Dong, 2025; Botero et al., 2021). Beach cleanliness is particularly important because visitors evaluate beaches through both physical environmental conditions and the quality of the recreational experience associated with those conditions (Botero et al., 2021; Adam, 2021).

Marine and beach litter has become a persistent environmental-management challenge because waste deposited on shorelines can impair aesthetics, create safety and health concerns, and reduce the quality of coastal recreational environments (Adam, 2021; Haseler et al., 2025). Recent evidence from tourist and non-tourist beaches also demonstrates that litter patterns vary spatially and seasonally and

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that tourism-related pressures can interact with stormwater, coastal processes and waste-management deficiencies (Howlader et al., 2024; Haseler et al., 2025; Dong, 2025).

The tourism relevance of beach litter extends beyond environmental degradation because perceived environmental deterioration can influence destination evaluations and future tourism behaviour. Evidence from beach-user research indicates that visitors regard cleanliness as a major beach-quality attribute, while severe litter conditions can reduce willingness to revisit or shift demand towards alternative destinations (Botero et al., 2021; Adam, 2021; Mutuku et al., 2022). More recent research has similarly shown that marine plastic debris can reduce tourists' willingness to return and generate substantial economic consequences for tourism-dependent destinations (Giglio et al., 2025).

Visitors are also active participants in the environmental system of tourism destinations. Their behaviour can contribute to litter generation through inappropriate disposal, but visitors can also participate in clean-ups and other environmentally responsible practices that support destination management (Lucrezi & Digun-Aweto, 2020; Adam, 2021). Research on marine tourism increasingly shows that tourist behaviour is shaped by both internal factors, such as environmental awareness, values and perceived responsibility, and contextual factors, such as infrastructure, social norms, information and management practices (Dong, 2025; Wang et al., 2024).

Environmental consciousness is therefore relevant to beach-management research because awareness does not necessarily translate automatically into responsible behaviour. A recent systematic review of sustainable tourist behaviour identified an important distinction between intended and actual behaviour and highlighted waste management and visitor-environment interactions as areas requiring greater attention (Li et al., 2024). Similarly, research among tourists has found that environmental awareness may support pro-environmental behaviour through environmental engagement, but awareness alone may be insufficient to produce responsible action (Kim et al., 2023; Chang et al., 2024).

Environmental education and communication can help reduce this gap between awareness and action. Evidence indicates that environmental education can improve tourists' responsible behaviour by strengthening knowledge, awareness and motivation, while experiential environmental learning can influence pro-environmental intentions through nature connection and emotional responses (Kurniawan et al., 2024; Liu et al., 2024). Environmental communication can also work through social and contextual cues: visible pro-environmental behaviour by residents can increase tourists' intentions to behave responsibly, suggesting that destinations can use social norms and visible environmental practices as behavioural signals (Liu et al., 2024).

The Nigerian coastal context is especially relevant because previous research at Elegushi Royal Beach found that visitors recognised marine litter as a national and global concern, although willingness to participate in clean-up activities was limited and was associated with perceived collective responsibility and previous clean-up participation (Lucrezi & Digun-Aweto, 2020). Recent field evidence from six Lagos beaches, including Elegushi, has further documented substantial litter occurrence, with plastic and Styrofoam among the dominant materials and with tourism and waste-management conditions identified as important management considerations (Ayo-Dada et al., 2025).

Recent research also suggests that environmental perceptions are multidimensional. Tourists can evaluate litter in relation to health, recreation, aesthetics and the wider coastal environment, while socio-demographic characteristics and environmental values may influence their willingness to engage in clean-up activities (Adam, 2021). Studies of tourist pro-environmental behaviour likewise show that environmental awareness, environmental attachment, green motivation, nature connection and perceived social norms can operate together rather than as isolated influences (Khan et al., 2024; Zhang et al., 2024; Liu et al., 2024).

Despite the growing literature on marine litter and pro-environmental tourism behaviour, fewer studies have directly examined whether visitors' environmental consciousness corresponds with their satisfaction with beach cleanliness in the Nigerian coastal context. This distinction matters because a visitor may report satisfaction with a visibly clean beach as a result of management services without necessarily engaging in environmentally responsible behaviour, while an environmentally conscious visitor may remain dissatisfied where management infrastructure is inadequate (Dong, 2025; Botero et al., 2021).

Accordingly, this study examines visitors' environmental consciousness and satisfaction with beach cleanliness at Eleko and Elegushi Beaches in Lagos State, Nigeria. By comparing the two beaches and

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examining socio-demographic relationships and the association between environmental consciousness and cleanliness satisfaction, the study contributes empirical evidence to the literature on visitor behaviour, beach management and sustainable coastal tourism in Nigeria.

1.1 Research Objective

The objective of this study was to determine the level of visitors' environmental consciousness and satisfaction with beach cleanliness at Eleko and Elegushi Beaches, Lagos State, Nigeria.

1.2 Research Hypothesis

H_0: There is no significant relationship between socio-demographic characteristics and the level of visitors' environmental consciousness and satisfaction with beach cleanliness.

2. Literature Review

2.1 Environmental Consciousness of Beach Visitors

Environmental consciousness can be understood as a combination of environmental awareness, concern, values and behavioural orientation that shapes how individuals respond to environmental issues. In tourism settings, this construct is important because visitors interact directly with natural resources and can either reinforce or reduce environmental pressures through their everyday choices (Li et al., 2024; Dong, 2025).

Tourists' environmental consciousness is not necessarily equivalent to observable pro-environmental behaviour. Research has demonstrated that tourists may hold environmental concerns while showing different levels of actual responsible behaviour, indicating a potential attitude–behaviour gap in tourism contexts (Chang et al., 2024; Wang et al., 2024). This gap is particularly relevant in beach destinations where visitors make repeated low-effort decisions about litter disposal, use of bins, compliance with rules and participation in environmental programmes.

Research on tourist environmental behaviour indicates that environmental awareness, knowledge and concern can contribute to responsible behaviour, but the strength of the relationship depends on other psychological and contextual conditions (Khan et al., 2024; Noh, 2024). In nature-based destinations, environmental awareness and perceived environmental quality can encourage environmental engagement, which in turn supports pro-environmental behaviour (Kim et al., 2023).

Environmental education is another important pathway through which consciousness can be translated into responsible action. Kurniawan et al. (2024) found that environmental education can support responsible tourist behaviour, while Liu et al. (2024) showed that ecological experiential learning can strengthen pro-environmental behavioural intentions through nature connection and emotional responses.

Social context also matters. Tourists can be influenced by visible pro-environmental behaviour in the destination, suggesting that social norms and environmental atmospheres can encourage responsible conduct (Liu et al., 2024). Similarly, recent studies show that green self-image, environmental attitudes and other psychological mechanisms can shape tourist pro-environmental behaviour (Zhang et al., 2024; Wang et al., 2024).

In beach settings specifically, Lucrezi and Digun-Aweto (2020) found that visitors at Elegushi Royal Beach recognised marine litter as an important problem, but willingness to participate in clean-up activities was limited. Participation was more closely associated with previous clean-up experience, collective responsibility and perceptions of the importance of policy and investment, illustrating that awareness alone does not guarantee action.

Adam (2021) similarly found that tourists' perceptions of beach litter involved health, recreational, aesthetic and coastal-environment dimensions and that demographic and environmental-value characteristics influenced willingness to participate in clean-up activities. These findings support the use of behavioural indicators alongside general attitudinal measures when assessing environmental consciousness among beach visitors.

2.2 Beach Cleanliness and Visitor Satisfaction

Beach cleanliness is a central component of recreational quality because visitors use visible environmental conditions to evaluate the suitability and attractiveness of coastal destinations (Botero

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et al., 2021). Cleanliness is therefore both an environmental-management outcome and a tourism-experience attribute.

Botero et al. (2021) demonstrated that beach users attach substantial importance to cleanliness and proposed a framework combining users' perceptions with quantitative assessment of litter. Their findings support the view that beach-management decisions should consider not only the quantity of litter but also the types of litter that users regard as most relevant.

Beach litter can influence destination attractiveness and tourism demand. Research among beach users has shown that visitors perceive litter in relation to health, aesthetics, recreation and the coastal environment, while severe litter scenarios can discourage visitation and create economic consequences for destinations (Adam, 2021; Krelling et al., 2017). Recent evidence from the Galápagos similarly indicates that marine plastic debris can reduce willingness to return and generate substantial potential economic losses for tourism-dependent areas (Giglio et al., 2025).

Recent studies also demonstrate that litter is not distributed uniformly across beaches. Tourist beaches may experience different litter loads from non-tourist beaches, while seasonal processes, stormwater, waste-management systems and human shoreline activities can affect the quantity and composition of debris (Howlader et al., 2024; Haseler et al., 2025). This reinforces the importance of localised beach-management assessment rather than assuming that all coastal destinations face identical litter conditions.

Visitor satisfaction with cleanliness may also depend on management infrastructure and communication rather than on litter quantity alone. Waste bins, cleaning services, disposal frequency, signage and environmental information can shape how visitors interpret the condition of a destination (Botero et al., 2021; Dong, 2025). However, individual management measures may not operate independently because visitors can form an overall evaluation of the destination from multiple environmental and service cues.

The relationship between cleanliness and visitor satisfaction is therefore potentially multidimensional. A visitor may perceive a beach as clean because management staff remove litter regularly, even when visitors themselves contribute to waste generation. Conversely, visitors may recognise environmental problems and still express positive satisfaction with other aspects of the recreational experience. The distinction between environmental conditions and behavioural responsibility is consequently important when interpreting visitor satisfaction data (Dong, 2025; Adam, 2021).

Evidence from Lagos strengthens the need for this distinction. Ayo-Dada et al. (2025) identified substantial litter across six Lagos beaches, including Elegushi, and reported plastic, Styrofoam, metal and rubber among important litter categories. The authors recommended improved waste-management infrastructure and environmentally responsible practices among tourists and businesses, indicating that physical cleanliness and visitor behaviour need to be addressed together.

2.3 Environmental Communication, Signage and Visitor Behaviour

Environmental communication provides visitors with information about expected behaviour and the consequences of environmentally harmful actions. In tourism settings, communication can include signs, educational activities, interpretive materials, staff instructions and digital messages designed to make environmental responsibilities visible (Dong, 2025; Kurniawan et al., 2024).

Signage can function as a behavioural cue by making rules and expectations immediately visible at the point where a decision is made. The broader literature on tourist pro-environmental behaviour suggests that contextual cues, social norms and perceived behavioural control can influence whether environmental intentions are translated into action (Dong, 2025; Liu et al., 2024).

Environmental education can also contribute to responsible visitor behaviour by increasing knowledge and strengthening environmental concern. Evidence from tourism research shows that education and experiential learning can support responsible behaviour and pro-environmental intentions, particularly where visitors are given opportunities to connect environmental information with direct experiences (Kurniawan et al., 2024; Liu et al., 2024).

Social influence is another relevant mechanism. Liu et al. (2024) found that visible pro-environmental behaviour by residents can increase tourists' intentions to behave responsibly, indicating that visitors interpret the environmental atmosphere of a destination when forming behavioural responses. This suggests that beach managers can complement formal signage with visible staff compliance, clean-up activities and responsible behaviour by vendors and other users.

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Beach-clean-up participation provides a further example of the interaction between communication and responsibility. At Elegushi Royal Beach, willingness to participate in clean-ups was associated with perceived collective responsibility and previous participation, suggesting that repeated engagement and clear responsibility structures may be more effective than awareness messages alone (Lucrezi & Digun-Aweto, 2020).

Taken together, the literature indicates that beach environmental management should combine physical infrastructure, communication, education and opportunities for visitor participation. The present study therefore considers visitors' reported use of waste bins, participation in environmental education, adherence to anti-littering signage and other behavioural indicators alongside their satisfaction with cleanliness-management measures.

2.4 Research Gap

Existing research has established that beach cleanliness influences visitor perceptions and that environmental awareness can support pro-environmental behaviour, but the two dimensions do not necessarily move together. Recent tourism research increasingly emphasises the gap between environmental awareness and actual behaviour, while beach-litter research has often focused either on physical litter assessment or willingness to participate in clean-up activities (Li et al., 2024; Dong, 2025; Adam, 2021). In Nigeria, previous work at Elegushi has examined willingness to participate in litter clean-ups, and recent Lagos research has documented the composition and distribution of marine litter across beaches, but limited empirical attention has been given to the relationship between visitors' environmental consciousness and their satisfaction with beach cleanliness across different Lagos beaches (Lucrezi & Digun-Aweto, 2020; Ayo-Dada et al., 2025). This study addresses that gap by examining Eleko and Elegushi together and testing whether visitors' socio-demographic characteristics and cleanliness perceptions are associated with environmental consciousness and satisfaction.

3. Methodology

3.1 Study Area

The study was conducted at Eleko Beach (EB) and Elegushi Royal Beach (ERB) in Lagos State, Nigeria. The research focused on visitors to the two beaches and assessed their environmental consciousness and perceptions of beach cleanliness.

3.2 Research Design

A quantitative survey design was employed. Visitors' environmental consciousness and satisfaction with beach cleanliness were assessed using structured questionnaire items. The project measured environmental consciousness through indicators including use of waste bins, littering behaviour, participation in environmental education, compliance with anti-littering signage and use of beach toilets/restrooms. Satisfaction with beach cleanliness included perceptions of waste-bin adequacy, beach maintenance, guidance modules, anti-littering signage, environmental education, litter management, cleanliness of service-provider areas and regular waste disposal.

3.3 Data Analysis

The project states that questionnaire data were coded and analysed using IBM SPSS. Descriptive statistics were used for frequencies, percentages, charts and tables. Chi-square analysis was used to examine relationships between socio-demographic characteristics and visitors' environmental consciousness and satisfaction with beach cleanliness, while correlation analysis was used to assess the association between environmental consciousness and satisfaction.

4. Results

4.1 Visitors' Environmental Consciousness

The results demonstrate differences between Eleko and Elegushi in several environmental-consciousness indicators. At Eleko Beach, the mean score for use of waste bins was 2.64 (SD = 2.60) compared with 4.43 (SD = 3.90) at Elegushi. The mean score for participation in environmental education was 2.29 (SD = 2.17) at Eleko and 4.09 (SD = 3.58) at Elegushi. Adherence to signage

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prohibiting littering recorded means of 1.66 (SD = 1.22) and 2.63 (SD = 2.25) at Eleko and Elegushi, respectively.

However, the item concerning disposal of plastics, paper, metallic objects, glass and nylon on the sand recorded mean scores of 4.08 at Eleko and 4.54 at Elegushi. This finding should be interpreted cautiously because the questionnaire's response coding and the direction of the scale mean that a higher numerical value does not automatically represent better environmental behaviour.

Environmental consciousness indicator	Eleko Mean	Eleko SD	Elegushi Mean	Elegushi SD
I make use of the waste bins provided on the beach	2.64	2.60	4.43	3.90
I drop plastics, paper, metallic objects, glass and nylon on the sand	4.08	3.79	4.54	4.06
I always participate in the environmental education organized by the beach management	2.29	2.17	4.09	3.58
I adhere strictly to the signage that prohibits littering	1.66	1.22	2.63	2.25
I adequately use the restrooms/toilets provided on the beach	4.31	3.89	4.08	3.56

Source: Field survey, 2024

4.2 Socio-Demographic Characteristics, Satisfaction and Environmental Consciousness

Income was the only socio-demographic characteristic that showed a statistically significant relationship with environmental satisfaction and consciousness (p = .047). Gender (p = .733), age (p = .361), education (p = .244), nationality (p = .912), occupation (p = .331) and membership of an environmental organisation (p = .562) were not significant.

Variable	χ^2	p-value / Decision
Gender	0.116	.733 — Not significant
Age	17.391	.361 — Not significant
Education	5.456	.244 — Not significant
Nationality	0.012	.912 — Not significant
Occupation	13.543	.331 — Not significant
Membership	0.335	.562 — Not significant
Income	26.507	.047 — Significant

Source: Field survey, 2024

4.3 Satisfaction with Beach Cleanliness

Among the satisfaction indicators, signage prohibiting littering was the only factor that showed a statistically significant relationship with visitors' satisfaction with beach cleanliness (p = .001). The adequacy of waste-bin facilities (p = .101), beach staff cleaning and maintenance (p = .059), guidance modules (p = .985), environmental education activities (p = .158), litter management (p = .814), cleanliness of service-provider work areas (p = .168) and regular waste disposal (p = .253) were not statistically significant.

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Satisfaction indicator	χ^2	p-value / Decision
Waste-bin facilities provided across the beach are adequate	6.23	.101 — Not significant
Beach staff clean and maintain the beach	7.439	.059 — Not significant
The beach has guidance modules	6.270	.985 — Not significant
The beach has signage that prohibits littering	32.646	.001 — Significant
The beach has environmental education activities for users	13.111	.158 — Not significant
Litters are well managed and controlled by management	4.454	.814 — Not significant
Service providers keep their work areas clean	3.570	.168 — Not significant
There is regular disposal of waste	7.796	.253 — Not significant

Source: Field survey, 2024

The finding concerning signage indicates that visible environmental communication may be more strongly associated with visitors' perceptions of cleanliness than some of the other management variables assessed.

4.4 Environmental-Consciousness Indicators and Their Relationships

None of the environmental-consciousness indicators examined in the chi-square analysis reached statistical significance. Waste-bin use had p = .285; littering behaviour, p = .929; participation in environmental education, p = .788; adherence to anti-littering signage, p = .661; and use of restrooms/toilets, p = .251.

Environmental-consciousness indicator	χ^2	p-value / Decision
I make use of the waste bins provided on the beach	14.243	.285 — Not significant
I drop plastics, paper, metallic objects, glass and nylon on the beach sand	5.728	.929 — Not significant
I always participate in environmental education provided by beach management	4.707	.788 — Not significant
I adhere strictly to signage that prohibits littering	5.876	.661 — Not significant
I adequately use the restrooms/toilets provided on the beach	7.825	.251 — Not significant

Source: Field survey, 2024

4.5 Relationship between Satisfaction and Environmental Consciousness

The correlation analysis produced a very weak positive relationship between visitors' satisfaction with beach cleanliness and environmental consciousness at Eleko Beach (r = .0515). At Elegushi Beach, the relationship was very weak and negative (r = −.0233).

Variable	Eleko Beach (r)	Elegushi Beach (r)
Satisfaction with beach cleanliness and environmental consciousness	0.0515	−0.0233

Source: Field survey, 2024

The coefficients indicate that satisfaction with beach cleanliness and environmental consciousness were essentially unrelated in the study population.

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5. Discussion

Visitors at Elegushi recorded higher mean scores for waste-bin use, participation in environmental education and adherence to anti-littering signage than visitors at Eleko. The difference is relevant because recent research shows that environmental engagement, education and contextual cues can influence tourist pro-environmental behaviour (Kurniawan et al., 2024; Liu et al., 2024; Dong, 2025).

The high score for the negatively worded littering item requires cautious interpretation because the numerical direction of that item does not necessarily correspond to better environmental behaviour. This reinforces the importance of reverse-coding negatively worded items before constructing an overall consciousness index.

Income was the only socio-demographic characteristic significantly associated with environmental satisfaction and consciousness ($p = .047$). This finding is broadly compatible with evidence that socio-demographic and socioeconomic characteristics can influence tourists' environmental perceptions and behavioural responses, although the cross-sectional design does not permit a causal interpretation (Adam, 2021; Mutuku et al., 2022).

Anti-littering signage was the only satisfaction-related management indicator that showed a statistically significant association with satisfaction with beach cleanliness ($p = .001$). This finding is plausible because visible environmental communication provides an immediate behavioural and interpretive cue, and recent literature emphasises the importance of contextual and social cues in shaping tourist pro-environmental responses (Liu et al., 2024; Dong, 2025).

The lack of significant relationships for waste-bin adequacy, staff cleaning, guidance modules, environmental education, litter management, service-provider cleanliness and regular waste disposal suggests that visitors may evaluate beach cleanliness holistically rather than treating individual management components as independent determinants. Beach cleanliness is itself a multidimensional quality attribute, involving both visible litter and the broader environmental experience (Botero et al., 2021; Adam, 2021).

Most importantly, the correlations between environmental consciousness and satisfaction were almost zero at both beaches. This supports the growing literature showing that environmental awareness or concern does not necessarily translate directly into observable behaviour or other tourism outcomes (Chang et al., 2024; Kim et al., 2023; Dong, 2025).

The result also has practical significance for beach management. A clean beach may satisfy visitors because management services remove waste, while that cleanliness may not be generated by visitors' own responsible behaviour. Conversely, environmentally conscious visitors may remain dissatisfied where infrastructure or management performance is inadequate. Recent evidence from Lagos similarly shows that litter remains substantial across several beaches, supporting the need to combine infrastructure, communication and visitor responsibility (Ayo-Dada et al., 2025).

Overall, the findings support an integrated approach in which physical cleanliness, visitor satisfaction and environmental behaviour are monitored as distinct but interacting dimensions of sustainable coastal tourism.

6. Conclusion

This study assessed visitors' environmental consciousness and satisfaction with beach cleanliness at Eleko and Elegushi Beaches in Lagos State. The findings revealed differences in several environmental-consciousness indicators between the two beaches. Income was the only socio-demographic variable significantly associated with environmental satisfaction and consciousness, while signage prohibiting littering was the only satisfaction-related management indicator showing a significant relationship. The relationship between visitors' satisfaction with beach cleanliness and environmental consciousness was extremely weak at both beaches. The findings therefore demonstrate that visitor satisfaction and environmental consciousness should be treated as related but distinct dimensions of beach environmental management.

7. Practical Implications

Strengthen anti-littering signage: Since signage prohibiting littering was significantly associated with satisfaction, beach managers should maintain clear, strategically positioned and easy-to-understand signs.

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Combine signage with education: Signage should explain why littering is harmful and how visitors can participate in responsible waste management.
Improve visitor engagement: Environmental campaigns should encourage visitors to move beyond awareness toward observable behaviours such as proper waste disposal and participation in clean-up activities.
Target different visitor groups: Because income was the only socio-demographic variable showing a significant relationship, environmental communication can be designed to reach visitors across different socioeconomic groups rather than assuming that education or age alone determines environmental consciousness.
Integrate visitor behaviour into beach management: Cleanliness should not depend exclusively on management staff. Visitors, service providers and beach operators should share responsibility for maintaining environmental quality.
Monitor both physical cleanliness and behavioural indicators: Management should periodically measure litter levels alongside visitor attitudes, waste-disposal behaviour and satisfaction.

8. Limitations

The study relied on questionnaire responses from beach visitors, meaning that some behavioural responses may be affected by respondents' perceptions or reporting tendencies. In addition, the cross-sectional design does not permit causal conclusions about the relationship between socio-demographic characteristics, environmental consciousness and satisfaction. The extremely weak correlation coefficients should therefore be interpreted as evidence of the observed association in this study rather than as proof that environmental consciousness can never influence satisfaction.

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