

The Importance of Factors Influencing Tourist Attraction in Ecological Tourism

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ABSTRACT

Ecotourism is an important component of sustainable tourism because it supports local economic development while promoting natural resource conservation. However, tourist attraction and visitation are influenced by various supporting factors that may differ according to tourist group size. This study examines the factors influencing tourist activity in ecotourism destinations, focusing on road maintenance, internet support, transportation, accommodation, travel agency activities, government subsidies, preferential loans, and institutional cooperation. A quantitative approach was employed using structured questionnaires distributed to local communities around ecotourism destinations. Data from 103 respondents were analyzed using STATA-17 through Pearson chi-square and Kendall's tau. The findings show that road maintenance is significant for groups of 15–20 and 20–25 tourists, while internet support is significant for larger groups. Accommodation is more relevant to groups of 5–10 and 10–15 tourists, whereas transportation is significant for groups of 10–15 tourists. Travel agency activities show significant relationships across several groups, while government subsidies and preferential loans have differentiated effects according to group size. The study emphasizes the importance of integrated infrastructure, tourism services, digital connectivity, institutional cooperation, and socioeconomic support to strengthen tourist attraction and sustainable ecotourism development.

Keywords: *Ecotourism, Infrastructure, Tourist Attraction, Tourist Groups, Tourism Development, Sustainable Tourism.*

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1. | INTRODUCTION

Ecotourism has increasingly emerged as an important component of sustainable tourism because it combines the utilization of natural resources for tourism activities with environmental conservation and local economic development. Unlike conventional tourism, ecotourism places greater emphasis on natural attractions, environmental quality, local participation, and responsible tourist behavior. The attractiveness of an ecotourism destination is therefore not determined solely by the existence of natural resources, but also by the quality of supporting facilities, accessibility, destination image, tourist satisfaction, and the capacity of local stakeholders to manage tourism activities sustainably. Research on destination attractiveness shows that tourist attractions constitute core determinants, while support facilities, services, and people-related factors provide complementary contributions to destination attractiveness (Vengesai et al., 2009). Similarly, destination image and perceived destination quality can shape tourist satisfaction and subsequently influence tourist loyalty (Vinh & Phuong, 2017).

The development of ecotourism requires adequate tourism infrastructure because tourists' experiences are strongly influenced by the availability and quality of facilities surrounding destinations. Infrastructure, recreational facilities, and accommodation are closely connected with tourism development and tourist arrivals, particularly as destinations develop and tourist expectations increase (Mandić et al., 2018). Accommodation is also an important component of destination planning because the quality and quantity of accommodation supply can influence the overall success of tourism development (Sharpley, 2000). In natural-based tourism, accessibility and facilities further contribute to tourist satisfaction, which subsequently affects tourists' intention to revisit a destination (Fatmawati & Olga, 2023). These findings indicate that improving road access, transportation, accommodation, and communication facilities can strengthen the ability of ecotourism destinations to attract and retain visitors.

In addition to physical infrastructure, destination attractiveness is closely related to tourists' perceptions and experiences. Destination image represents an important element in the travel decision-making process because tourists develop perceptions of a destination based on its physical attributes, experiences, and symbolic characteristics (Echtner & Ritchie, 1991; Tasci et al., 2007). In ecotourism, natural attractions, wildlife, local lifestyles, and environmentally oriented activities can function as important pull factors that motivate tourists to visit particular destinations (Kim Lian Chan & Baum, 2007). Tourist satisfaction is also important because economic, social, and environmental conditions can influence the quality of the tourist experience and the likelihood of repeat visitation (Jarvis et al., 2016). Therefore, the development of ecotourism should consider destination attractiveness and tourist satisfaction as interconnected components rather than treating natural attractions and tourism services separately.

Sustainability further requires active participation from local communities, government institutions, and tourism-related businesses. Recent evidence indicates that active engagement by local authorities and local populations, high tourist satisfaction, attractive attractions, quality services, and environmental protection are among the important factors supporting sustainable development in ecotourism settlements (Habibulloev et al., 2024). At the same time, tourism development needs to consider ecological efficiency because economic expansion without adequate environmental management may increase pressure on natural resources. Factors such as transportation infrastructure, government intervention, technological innovation, and the digital economy can influence the ecological efficiency of tourism development (Deng & Chen, 2024). Thus, sustainable ecotourism requires an integrated approach that balances tourist attractiveness, infrastructure development, economic benefits, and environmental protection.

Although previous studies have examined destination attractiveness, infrastructure, tourist satisfaction, destination image, and sustainability, these factors are often analyzed separately or from the perspective of general tourism destinations. The specific relationship among infrastructure, tourism services, destination attractiveness, tourist satisfaction, and the intensity of tourist visits in ecotourism destinations remains important to examine. This study therefore focuses on identifying the factors influencing tourist activity in ecotourism areas, particularly the roles of road maintenance, internet availability, transportation, tourist accommodation, travel agency activities, and socioeconomic support. By examining these factors, the study seeks to provide a more comprehensive understanding of how destination attractiveness and supporting conditions can contribute to the sustainable development of ecotourism.

2. | LITERATURE REVIEW

Tourism Infrastructure, Accessibility, and Destination Attractiveness

Tourism infrastructure is a fundamental component in determining the attractiveness and development of ecotourism destinations because natural attractions require adequate supporting facilities to become accessible and enjoyable tourism experiences. Infrastructure includes roads, transportation, accommodation, internet connectivity, recreational facilities, and other services that support tourist activities. Vengesai et al. (2009) demonstrate that tourist attractions are the primary determinants of destination attractiveness, while support facilities and services function as complementary factors that strengthen tourists' perceptions of a destination. Similarly, Mandić et al. (2018) found a significant relationship between tourism infrastructure, recreational facilities, tourist arrivals, and overnight stays, indicating that infrastructure needs to develop in accordance with tourist demand and destination development. In the context of ecotourism, accessibility is particularly important because natural attractions are frequently located outside major tourism centers. Adequate transportation and road infrastructure can therefore reduce accessibility barriers and increase the potential for tourist visits. Fatmawati and Olga (2023) further confirm that

accessibility, facilities, environmental quality, and attractiveness positively influence tourist satisfaction in natural-based tourism destinations.

Accommodation and supporting tourism services also contribute to the sustainability and attractiveness of destinations. Sharpley (2000) emphasizes that the quality and quantity of accommodation supply should be incorporated into destination planning because accommodation development can directly influence tourism performance. Meanwhile, Kim Lian Chan and Baum (2007) show that ecotourists are strongly attracted by natural attractions, wildlife, local lifestyles, and ecological activities, suggesting that accommodation should complement rather than replace the core attractions of ecotourism. Therefore, infrastructure development should not be understood merely as physical construction but as an integrated system that facilitates access to natural attractions while maintaining tourist comfort and supporting local economic activities. This perspective is consistent with Deng and Chen (2024), who identify transportation infrastructure, government intervention, technological development, and the digital economy as important factors influencing tourism ecological efficiency. Consequently, the availability and quality of infrastructure can strengthen destination attractiveness while simultaneously supporting more sustainable tourism development.

Destination Image, Tourist Satisfaction, and Sustainable Ecotourism

Destination image and tourist satisfaction are closely connected to tourists' decisions to visit, revisit, and recommend a destination. Destination image refers to the perceptions and impressions that tourists develop regarding the characteristics and experiences associated with a particular destination. Echtner and Ritchie (1991) explain that destination image plays an important role in the travel decision process, while Tasci et al. (2007) emphasize the importance of conceptualizing destination image through both perceptual and methodological dimensions. A positive destination image can contribute to perceived destination quality and tourist satisfaction, which subsequently influences tourist loyalty (Vinh & Phuong, 2017). Chenini and Touaiti (2018) similarly argue that destination image, tourist perception, and satisfaction are important elements in building destination loyalty. In ecotourism, these relationships become particularly relevant because tourists often seek destinations that provide attractive natural environments, meaningful experiences, environmental quality, and opportunities to interact with local communities. Hong and Ma (2019) further indicate that ecological tourism attractiveness is associated with tourists' feelings of comfort, relaxation, reassurance, scientific understanding, and intimacy, demonstrating that ecotourism attractiveness extends beyond physical attractions.

Tourist satisfaction is also an important mechanism connecting destination characteristics with sustainable tourism outcomes. Jarvis et al. (2016) found that economic, social, and environmental conditions influence trip satisfaction and, consequently, the likelihood of tourists returning to a destination. Mohamad et al. (2019) further demonstrate that destination attractiveness can influence destination

loyalty through tourist satisfaction and place attachment. In ecotourism, maintaining satisfaction therefore requires not only attractive natural resources but also quality services, effective interpretation, environmental protection, and local participation. Coghlan (2012) argues that the relationship between natural resource management and tourist satisfaction can be strengthened through service quality and effective interpretation provided by tourism operators. More recent evidence from Habibullov et al. (2024) confirms that active participation of local authorities and communities, high tourist satisfaction, attractive sights, quality services, and environmental protection are important determinants of sustainable development in ecotourism settlements. Thus, destination image, tourist satisfaction, infrastructure, and environmental management should be viewed as interconnected factors in strengthening tourist attractiveness and ensuring the long-term sustainability of ecotourism destinations.

3. | RESEARCH METHOD

This study employed a quantitative research approach with an empirical design to examine the factors influencing tourist activity and attractiveness in ecotourism destinations. The quantitative approach was selected because it enables the relationships between tourism-support factors and tourist visitation patterns to be measured objectively using statistical analysis. Primary data were collected through a structured questionnaire distributed to local communities living around ecotourism destinations. The questionnaire focused on several factors considered relevant to tourism development, including road maintenance, internet support, transportation, tourist accommodation, travel agency activities, government subsidies, preferential loans, and cooperation with travel agencies.

A total of 103 respondents participated in the study. The collected responses were organized according to the number of tourists visiting the ecotourism destination in a single group, consisting of 5–10, 10–15, 15–20, and 20–25 participants. This grouping was used to identify whether the influence of tourism-support factors differed according to the scale of tourist visitation. The analysis employed Pearson chi-square to examine the statistical relationship between the categorical variables and Kendall's tau to identify the direction and strength of the relationships. Statistical significance was assessed using conventional levels of $p < .10$, $p < .05$, and $p < .01$. All data were processed and analyzed using STATA-17 statistical software. The results were interpreted empirically to identify the factors that contribute to tourist activity and provide implications for the sustainable development and management of ecotourism destinations.

4. | RESULTS

The results of the analysis indicate that tourist attraction in ecotourism areas is influenced by a combination of accessibility, infrastructure, tourism services, accommodation, internet support, transportation, travel agency activities, and external

socioeconomic support. The analysis was conducted by dividing tourist visits into four groups based on the number of tourists in a single visit, namely 5–10, 10–15, 15–20, and 20–25 participants. This grouping provides a more detailed understanding of whether the importance of particular factors changes according to the scale of tourist visits. Table 1 presents the statistical relationship between the factors affecting tourist activity and the number of tourists visiting ecotourism destinations across the four visitor-group categories.

Table 1. Analysis of the dependence of factors affecting the tourist activity of the region

№	Indicators	5-10 participants	10-15 participants	15-20 participants	20-25 participants
1.	Road maintenance: - Pearson chi2 - Kendall value	0.587 -0.0384	0.185 0.0430	0.012** 0.1778	0.004*** 0.2391
2.	Internet support: - Pearson chi2 - Kendall value	0.731 0.0243	0.543 0.0430	0.074* 0.0832	0.021** 0.1169
3.	Transportation: - Pearson chi2 - Kendall value	0.372 0.0776	0.012** 0.1102	0.586 0.0385	0.389 0.0609
4.	Accommodation for tourists: - Pearson chi2 - Kendall value	0.005*** 0.1244	0.018** 0.1190	0.616 0.0355	0.569 0.0403
5.	Activities of travel agencies: - Pearson chi2 - Kendall value	0.042** 0.0673	0.033** 0.0440	0.086* 0.1214	0.731 0.0243

Table 1 shows that road maintenance, internet support, transportation, accommodation, and travel agency activities have varying relationships with tourist activity across visitor-group sizes, indicating that ecotourism development requires infrastructure and services adapted to different scales of tourist visitation. Road maintenance is particularly important for larger tourist groups. The Pearson chi-square results show no significant relationship for groups of 5–10 participants ($\chi^2 = 0.587$) and 10–15 participants ($\chi^2 = 0.185$). However, the relationship becomes significant for groups of 15–20 participants ($\chi^2 = 0.012$, $p < .05$) and 20–25 participants ($\chi^2 = 0.004$, $p < .01$). The Kendall values are 0.1778 and 0.2391, respectively, indicating positive relationships. Improvements in road infrastructure are associated with increases of approximately 17.7% and 23.9% in visits for the two larger groups.

This finding indicates that larger groups are more dependent on adequate road capacity, accessibility, and transportation conditions. It is consistent with Vengesai et al. (2009), who identify destination attractions as core determinants of attractiveness

while facilities and support services complement the destination experience. Mandić et al. (2018) similarly demonstrate the importance of tourism infrastructure and recreational facilities for arrivals and overnight stays. In natural-based tourism, accessibility also contributes to tourist satisfaction and revisit intention (Fatmawati & Olga, 2023).

Internet support shows a similar pattern, becoming more relevant as group size increases. It is not significant for groups of 5–10 participants ($\chi^2 = 0.731$) or 10–15 participants ($\chi^2 = 0.543$), but becomes marginally significant for groups of 15–20 participants ($\chi^2 = 0.074$, $p < .10$) and significant for groups of 20–25 participants ($\chi^2 = 0.021$, $p < .05$). The Kendall values of 0.0832 and 0.1169 indicate positive relationships, with estimated increases of 8.3% and 11.6% in group attendance. Internet connectivity can facilitate access to information about attractions, transportation, accommodation, and tourism services. This result is relevant to Deng and Chen (2024), who identify the digital economy, transportation infrastructure, government intervention, and technological innovation as factors associated with tourism ecological efficiency. Thus, digital connectivity can complement physical infrastructure in supporting ecotourism development.

Transportation produces a different pattern. It is statistically significant only for groups of 10–15 participants ($\chi^2 = 0.012$, $p < .05$), with a Kendall value of 0.1102 and an estimated 11.0% increase in group visits. It is not significant for groups of 5–10, 15–20, or 20–25 participants. This suggests that transportation requirements may be particularly important for medium-sized groups. Appropriate vehicles and organized transportation can determine whether tourists can efficiently reach ecotourism destinations. Transportation therefore functions not only as a logistical service but also as an important component of the overall tourism experience. This supports Vengesai et al. (2009), who emphasize that destination support facilities and services complement the attractiveness of tourism resources.

Accommodation shows the opposite pattern. Its relationship with tourist activity is significant for groups of 5–10 participants ($\chi^2 = 0.005$, $p < .01$) and 10–15 participants ($\chi^2 = 0.018$, $p < .05$), but not for groups of 15–20 ($\chi^2 = 0.616$) and 20–25 participants ($\chi^2 = 0.569$). Kendall values of 0.1244 and 0.1190 indicate positive relationships, with estimated increases of 12.4% and 11.9% in overnight visits. These results suggest that smaller groups may depend more strongly on accommodation facilities. Overnight stays can extend tourist visits and create additional economic opportunities for local communities. Sharpley (2000) emphasizes that accommodation quality and availability should be integrated into destination planning because they influence tourism development. Similarly, facilities can strengthen tourist satisfaction and revisit intention when combined with destination attractiveness and accessibility (Fatmawati & Olga, 2023).

Travel agency activities also demonstrate a differentiated relationship with tourist visits. The relationship is significant for groups of 5–10 participants ($\chi^2 = 0.042$, $p <$

.05), 10–15 participants ($\chi^2 = 0.033$, $p < .05$), and 15–20 participants ($\chi^2 = 0.086$, $p < .10$), with Kendall values of 0.0673, 0.0440, and 0.1214. The relationship is not significant for groups of 20–25 participants ($\chi^2 = 0.731$). Travel agency activities are associated with increases of approximately 6.7% and 4.4% in visits among the 5–10 and 10–15 groups. Travel agencies can provide information concerning routes, transportation, accommodation, and destination attractions, thereby connecting tourists with supporting services. This finding reinforces the view that support services and people-related factors complement destination attractiveness (Vengesayi et al., 2009). The second analysis examined external factors, particularly government subsidies, preferential loans, and cooperation with travel agencies.

Table 2. Analysis of the relationship with external factors in the development of ecotourism in Samarkand region

№	Indicators	5-10 participants	10-15 participants	15-20 participants	20-25 participants
1.	Allocation of subsidy: - Pearson chi2 - Kendall value	0.414 0.0578	0.090* 0.1200	0.027** 0.1567	0.826 0.0156
2.	Preferential loan allocation: - Pearson chi2 - Kendall value	0.733 -0.0241	0.632 0.0339	0.019** 0.0962	0.002*** 0.1183
3.	Cooperation with travel agencies: - Pearson chi2 - Kendall value	0.033** 0.0843	0.051* 0.0422	0.017** 0.1023	0.006*** 0.0613

Table 2 shows that Subsidy allocation is not significant for groups of 5–10 ($\chi^2 = 0.414$) or 20–25 participants ($\chi^2 = 0.826$), but is significant for groups of 10–15 ($\chi^2 = 0.090$, $p < .10$) and 15–20 participants ($\chi^2 = 0.027$, $p < .05$). The Kendall values are 0.1200 and 0.1567, indicating positive relationships. Subsidies for business expansion and service-quality improvement are associated with approximately 12.0%–15.6% increases in tourist coverage for these groups.

Preferential loans show a stronger relationship among larger groups. The relationship is significant for groups of 15–20 participants ($\chi^2 = 0.019$, $p < .05$) and 20–25 participants ($\chi^2 = 0.002$, $p < .01$), while it is not significant for smaller groups. Kendall values are 0.0962 and 0.1183, respectively. For groups of 20–25 participants, preferential financing is associated with an estimated 11.8% increase in tourist coverage. This suggests that financing mechanisms may become more relevant when tourism activities require greater investment in capacity and service development.

Cooperation with travel agencies produces the most consistent results. The relationship is significant across all four groups: 5–10 participants ($\chi^2 = 0.033$, $p < .05$), 10–15 participants ($\chi^2 = 0.051$, $p < .10$), 15–20 participants ($\chi^2 = 0.017$, $p < .05$), and 20–25 participants ($\chi^2 = 0.006$, $p < .01$). All Kendall values are positive: 0.0843, 0.0422, 0.1023, and 0.0613. This indicates that institutional cooperation with travel agencies has a relatively broad relationship with tourist activity regardless of group size.

Overall, the results demonstrate that no single factor determines tourist activity in ecotourism destinations. Road maintenance and internet support are more relevant to larger groups, accommodation is particularly important for smaller groups, transportation is significant for medium-sized groups, and travel agency activities influence several group categories. Government support also varies according to tourist scale, with subsidies more relevant to medium-sized groups and preferential loans more relevant to larger groups. These findings indicate that sustainable ecotourism development requires an integrated approach combining infrastructure, tourism services, digital connectivity, institutional cooperation, and socioeconomic support rather than relying on a single intervention.

5. | DISCUSSION

The findings demonstrate that tourist attraction in ecotourism destinations is shaped by an interconnected set of infrastructure, service, institutional, and socioeconomic factors rather than by natural attractions alone. The most important finding is that the influence of these factors varies according to the size of tourist groups. Road maintenance and internet support become statistically significant for larger groups, while accommodation is more important for smaller groups. Transportation is significant for medium-sized groups, whereas cooperation with travel agencies demonstrates a significant relationship across all tourist groups. This pattern indicates that ecotourism management should be based on the specific characteristics and capacity requirements of tourist groups rather than applying a uniform development strategy.

The significant relationship between road maintenance and larger tourist groups confirms that physical accessibility is an important condition for expanding ecotourism activity. The positive Kendall values for groups of 15–20 and 20–25 participants indicate that improvements in road infrastructure are associated with higher group visitation. This finding is consistent with Mandić et al. (2018), who identify tourism infrastructure and facilities as important elements associated with tourism arrivals and overnight stays. It also supports Fatmawati and Olga (2023), who found that accessibility contributes positively to tourist satisfaction in natural-based tourism. In ecotourism destinations, therefore, improvements in road access should be accompanied by appropriate transportation capacity so that increased accessibility does not create operational constraints or reduce the quality of the tourist experience.

The results concerning internet support also have important implications. Its statistical significance among larger groups suggests that digital connectivity becomes

increasingly valuable as tourist activity expands. Internet access allows tourists to obtain information about attractions, routes, accommodation, transportation, and tourism services before and during their visits. This finding is consistent with Deng and Chen (2024), who identify the digital economy and transportation infrastructure as relevant factors in tourism ecological efficiency. However, the weaker relationship among smaller groups suggests that digital connectivity may not be equally important for all visitors. Consequently, internet infrastructure should be developed as a complementary service that supports destination information and tourism management rather than being considered a substitute for basic physical infrastructure.

Accommodation shows the opposite pattern, with significant relationships among groups of 5–10 and 10–15 participants but not among larger groups. This result suggests that smaller tourist groups may depend more strongly on overnight stays and accommodation facilities. The finding supports Sharpley's (2000) argument that accommodation should be integrated into destination planning because its quality and availability influence tourism development. Overnight tourism can also extend visitors' length of stay and increase opportunities for local communities to obtain economic benefits. In this context, accommodation development should remain compatible with environmental and cultural sustainability so that increasing tourist capacity does not undermine the natural resources that constitute the primary attraction of ecotourism.

The consistently significant relationship between cooperation with travel agencies and all tourist groups represents another important finding. Travel agencies can connect tourists with transportation, accommodation, destination information, and other tourism services. This result supports Vengesai et al. (2009), who emphasize that support services and people-related factors complement the core attractions of a destination. It is also consistent with Kim Lian Chan and Baum (2007), who demonstrate that ecotourists are strongly attracted by natural attractions, wildlife, local lifestyles, and ecological activities. Travel agencies can therefore function as intermediaries that transform these destination attributes into organized tourism experiences.

Finally, the differentiated effects of subsidies and preferential loans indicate that government intervention should be adjusted to the scale of tourism activity. Subsidies are more relevant to groups of 10–15 and 15–20 participants, while preferential loans become significant for groups of 15–20 and 20–25 participants. This suggests that smaller tourism businesses may require direct assistance to improve services, whereas larger-scale activities may benefit more from financing mechanisms that support expansion. Habibullov et al. (2024) similarly emphasize the importance of local authority involvement, community participation, tourist satisfaction, quality services, and environmental protection in sustainable ecotourism development. Therefore, government policy should combine financial support with infrastructure improvement, institutional cooperation, service-quality development, and environmental protection. Such an integrated approach is essential for ensuring that increased tourist visitation

contributes to local economic benefits without weakening the environmental sustainability of ecotourism destinations.

6. | CONCLUSION

This study concludes that tourist attraction and activity in ecotourism destinations are influenced by a combination of infrastructure, tourism services, digital connectivity, institutional cooperation, and socioeconomic support. The effects of these factors vary according to the size of tourist groups. Road maintenance becomes particularly important for larger groups, while internet support contributes more strongly to visits involving 15–20 and 20–25 tourists. Accommodation is more relevant for smaller groups, while transportation shows a significant role particularly for groups of 10–15 tourists. Cooperation with travel agencies demonstrates a consistent relationship across all tourist group categories. The findings strengthen the understanding that ecotourism attractiveness should be viewed as a multidimensional concept. Natural attractions alone are insufficient to ensure sustainable tourist activity. Accessibility, accommodation, transportation, digital connectivity, tourism services, and institutional cooperation interact with destination attractiveness and tourist activity. The findings also demonstrate that the importance of tourism factors is context-dependent and may change according to the scale of tourist visitation.

For tourism managers, infrastructure and services should be developed according to the characteristics and capacity of tourist groups. Road quality, transportation, accommodation, and internet connectivity should be improved strategically rather than uniformly. Travel agencies should be actively involved in destination promotion, visitor planning, information provision, and tourism coordination. Government support through subsidies and preferential financing should also be adjusted to the scale and needs of tourism activities while maintaining environmental sustainability and local economic benefits. This study is limited by its focus on selected tourism-support factors and grouped tourist visitation patterns. Future research should examine additional variables, including destination image, tourist satisfaction, environmental awareness, digital promotion, local community participation, and environmental carrying capacity. Comparative studies across different ecotourism destinations and larger samples could provide broader insights into how infrastructure, institutional support, and tourist characteristics interact to strengthen sustainable ecotourism development.

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Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement

Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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