The Algorithmization of Social Life: The Impact of Artificial Intelligence on Interaction Patterns in Digital Society

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ABSTRACT

This study examines the impact of artificial intelligence (AI) on interaction patterns within digital society, with a particular focus on the process of algorithmization in everyday social life. As AI technologies increasingly mediate communication and decision-making, human interactions are progressively shaped by algorithmic systems rather than purely individual choices. This research employs a quantitative approach using survey data collected from 145 respondents to analyze the relationships between AI usage, trust, knowledge, and future intention to use AI. The findings reveal that AI usage remains at a moderate level, indicating that the integration of AI into daily life is still developing. Correlation analysis shows that trust has the strongest relationship with future AI use, followed by current usage and knowledge. These results suggest that AI adoption is primarily driven by perceptual and behavioral factors rather than technical understanding. Furthermore, the study identifies a reinforcing cycle in which trust increases usage, and repeated usage strengthens future dependence on AI systems. This cycle reflects the emergence of algorithmic structures that gradually shape social interaction patterns in digital society. Overall, the study concludes that while AI has not yet fully transformed social interaction, its influence is steadily increasing and is likely to play a more dominant role in the future.

Keywords Artificial Intelligence, Digital Society, Algorithmization, Social Interaction, Technology Adoption

INTRODUCTION

The rapid advancement of digital technologies has fundamentally transformed the structure of modern society, giving rise to what is commonly referred to as digital society. In this context, human interactions, communication patterns, and decision-making processes are increasingly mediated by technological systems, particularly artificial intelligence (AI) [1]. AI has become deeply embedded in everyday life through platforms such as social media, recommendation systems, and intelligent applications, reshaping how individuals interact, access information, and form social relationships [2].

One of the most significant developments in digital society is the growing role of algorithms in organizing and influencing human behavior. This phenomenon, often described as algorithmization, refers to the process by which social activities are structured, filtered, and guided by computational systems [3]. Instead of relying solely on human judgment, individuals increasingly depend on algorithmic outputs to make decisions, ranging from content consumption to social interaction. As a result, the boundaries between human agency and machine influence are becoming increasingly blurred [4].

Previous studies have highlighted that AI-driven systems play a critical role in shaping online behavior by personalizing content and influencing user

Submitted 1 May 2026
Accepted 10 July 2026
Published 17 November 2026

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Additional Information and Declarations can be found on page 268

DOI: 10.63913/jds.v2i4.44
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How to cite this article: G. M. Fahmi and S. Widodo, "The Algorithmization of Social Life: The Impact of Artificial Intelligence on Interaction Patterns in Digital Society," *J. Digit. Soc.*, vol. 2, no. 4, pp. 259-270, 2026.

engagement [5]. Research has also shown that factors such as trust and perceived usefulness significantly affect the adoption of AI technologies [6]. In addition, the concept of digital society emphasizes the transition from traditional, face-to-face interaction to digitally mediated communication networks, where technology acts as an intermediary in social relationships [7]. These developments indicate that AI is not merely a tool but a structural component that actively shapes social interaction patterns.

Despite the growing body of literature, existing research has largely focused on technological adoption or system performance, rather than examining how AI influences everyday social interactions in a broader societal context. Many studies emphasize either technical aspects of AI or user acceptance models without fully addressing the dynamic relationship between trust, knowledge, behavioral usage, and future dependence on AI systems [8]. Furthermore, there is still limited empirical research that integrates these variables to explain how algorithmic systems gradually reshape patterns of human interaction in digital environments.

This gap highlights the need for a more comprehensive analysis of the role of AI in transforming social behavior within digital society. In particular, there is a lack of empirical evidence explaining how cognitive factors such as trust and knowledge interact with behavioral factors such as usage and future intention, to form a reinforcing cycle of AI adoption. Understanding this relationship is essential to explaining the ongoing process of algorithmization and its implications for social interaction.

Therefore, this study aims to examine the impact of artificial intelligence on interaction patterns in digital society by analyzing the relationships between AI usage, trust, knowledge, and future intention to use AI. By employing a quantitative approach, this research seeks to provide empirical insights into how algorithmic systems influence human behavior and contribute to the transformation of social structures. The findings are expected to contribute to the existing literature by offering a more integrated perspective on AI adoption and its role in shaping the future of digital society.

Literature Review

The concept of digital society refers to a social structure in which digital technologies play a central role in shaping communication, interaction, and social organization. The emergence of digital networks has transformed traditional forms of social interaction into technologically mediated processes, where individuals increasingly rely on digital platforms to communicate and exchange information [9]. In this context, social relationships are no longer confined to physical spaces but are extended into virtual environments, enabling continuous and real-time interaction across geographical boundaries [10]. Scholars have emphasized that digital society is characterized by the integration of information and communication technologies into everyday life, resulting in new forms of social behavior and cultural practices [11]. This transformation has led to the development of network-based interactions, where individuals are connected through digital infrastructures rather than direct personal contact, positioning technology as both a medium and a structural force in shaping social interaction [12].

Artificial intelligence has emerged as a key driver in the evolution of digital society by enabling systems capable of processing data, learning from patterns,

and making autonomous decisions. AI technologies are widely embedded in applications such as recommendation systems, chatbots, and virtual assistants, all of which influence how users engage with digital environments [13]. These systems are designed to personalize user experiences, thereby increasing engagement and shaping behavioral patterns. Prior research indicates that AI significantly affects user interaction by filtering information and prioritizing certain types of content over others, ultimately influencing how individuals perceive and interpret reality [14]. This process can reinforce specific viewpoints and limit exposure to diverse perspectives. Furthermore, AI-driven systems often operate invisibly in the background, making their influence less apparent but highly impactful in guiding user behavior and interaction patterns [15].

The growing reliance on algorithmic systems has led to the concept of algorithmization, which refers to the increasing role of algorithms in structuring and regulating social activities. In digital society, algorithms play a central role in organizing information, determining content visibility, and shaping decision-making processes [16]. This represents a shift from human-centered interaction toward machine-mediated interaction, where algorithmic logic significantly influences social outcomes. Algorithmization affects various aspects of social life, including communication, consumption, and social networking. Existing studies suggest that algorithmic systems create feedback loops, where user behavior is continuously monitored and used to refine future recommendations [17]. This iterative process leads to behavioral reinforcement, gradually guiding individuals toward specific patterns of interaction. As a result, algorithms not only respond to user preferences but actively shape them over time, contributing to the restructuring of social behavior.

The adoption of artificial intelligence technologies is influenced by several interrelated factors, particularly trust, knowledge, and perceived usefulness. Trust is widely recognized as a critical determinant of technology adoption, as individuals are more likely to engage with AI systems when they perceive them as reliable and beneficial [18]. A lack of trust can significantly hinder adoption, even when the technology offers clear advantages. Knowledge also plays an important role, although its influence tends to be less direct. Individuals with greater understanding of AI may feel more confident in using such technologies; however, many users adopt AI tools without fully understanding how they function [19]. This indicates that familiarity and repeated exposure may be more influential than technical expertise in shaping user behavior. In addition, future intention to use AI is closely linked to current experience, as repeated interaction increases the likelihood of continued use, forming behavioral patterns that reinforce adoption over time [20].

Despite the growing body of literature on digital society and artificial intelligence, several research gaps remain. Much of the existing research focuses either on technological capabilities or on user acceptance models, without integrating both perspectives into a comprehensive analytical framework [21]. Additionally, there is limited empirical research examining how trust, knowledge, usage, and future intention interact simultaneously to influence social behavior in digital environments [22]. While the concept of algorithmization has been widely discussed in theoretical terms, there is still a lack of empirical evidence demonstrating how algorithmic systems reshape everyday social interactions [23]. Addressing these gaps is essential for developing a more holistic understanding of how artificial intelligence contributes to the transformation of

social life in digital society.

Methodology

This study employs a quantitative research approach to examine the impact of artificial intelligence on interaction patterns within digital society. The research design is based on a survey method, where data were collected through a structured questionnaire distributed to respondents. A total of 205 responses were obtained, representing diverse demographic backgrounds and providing a comprehensive overview of individuals engaged in digital environments.

The demographic characteristics of the respondents are presented in table 1. This table provides an overview of age distribution, gender composition, educational background, and employment status, which are essential for understanding the context of the sample and ensuring the validity of the analysis.

Table 1 Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage (%)
Age	18–24	65	31.71
	25–34	19	9.27
	35–44	34	16.59
	45+	49	23.90
	Under 18	38	18.54
Gender	Female	114	55.61
	Male	91	44.39
Education	Bachelor's degree	101	49.27
	High school	55	26.83
	Master's or higher	18	8.78
	Primary education	16	7.80
	Associate degree	15	7.32
Employment	Student	97	47.32
	Employed	85	41.46
	Unemployed	17	8.29
	Retired	6	2.93

The variables analyzed in this study were operationalized based on constructs commonly used in technology adoption research. These variables include AI usage, AI trust, AI knowledge, and future intention to use AI. Each variable was measured using a Likert scale ranging from 1 to 5, where higher values indicate stronger agreement or higher levels of engagement. The operational definitions of these variables are summarized in table 2.

Table 2 Operationalization of Variables

Variable	Type	Scale	Description
AI Usage	Dependent	1–5 Likert	Frequency of AI use in daily life
AI Trust	Independent	1–5 Likert	Level of trust in AI systems
AI Knowledge	Independent	1–5 Likert	Level of knowledge

			about AI
Future AI Use	Dependent	1–5 Likert	Intention to use AI in the future

To provide a conceptual understanding of the relationships between variables, a research model was developed, as illustrated in figure 1. The model assumes that AI trust and AI knowledge influence AI usage, which subsequently affects future intention to use AI. This conceptual framework reflects the process of algorithmization, where repeated interaction with AI systems gradually shapes user behavior and decision-making patterns.

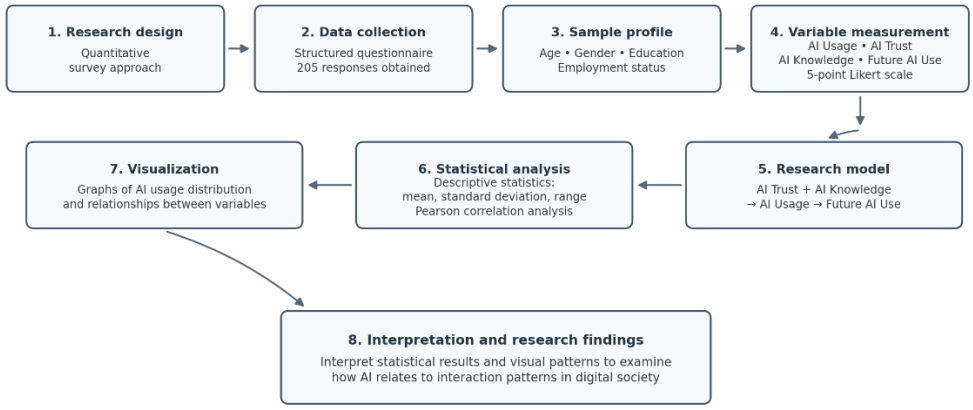


Figure 1 Research Model

The data analysis was conducted using statistical techniques, including descriptive statistics and correlation analysis. Descriptive statistics were used to summarize the characteristics of the variables, including mean values, standard deviations, and ranges. The mean value is calculated using the following formula:

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} \tag{1}$$

$\bar{x}$ represents the mean, x_i represents each observation, and n represents the number of observations. The variability of the data was measured using standard deviation, which is calculated as follows:

$$s = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}} \tag{2}$$

To analyze the relationships between variables, Pearson correlation analysis was applied. The correlation coefficient is calculated using the following formula:

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \tag{3}$$

The results of the analysis were further supported by graphical visualizations to enhance interpretability. The distribution of AI usage and the relationships between variables were illustrated through figures presented in the Results

section. These visualizations provide a clearer understanding of patterns within the data and support the interpretation of how artificial intelligence influences interaction patterns in digital society.

Results

This section presents the findings of the study based on descriptive and inferential statistical analysis. The results aim to explore the patterns of AI usage and examine the relationships between key variables, including trust, knowledge, and future intention to use artificial intelligence within the context of digital society.

To begin with, descriptive statistics were used to provide an overview of the central tendencies and variability of the main variables in this study. These variables include AI usage, AI trust, AI knowledge, and future AI use. The results are summarized in table 3.

Table 3 Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
AI Usage	2.42	1.18	1	5
AI Trust	2.98	0.89	1	5
AI Knowledge	2.88	0.76	1	5
Future AI Use	3.35	0.91	1	5

The results indicate that the average level of AI usage among respondents is relatively low to moderate, with a mean value of 2.42. In contrast, the intention to use AI in the future shows a higher mean of 3.35, suggesting a growing interest in adopting AI technologies despite current limited usage. Additionally, the levels of trust and knowledge appear to be moderate, indicating that respondents possess some familiarity with AI but are not yet highly confident in its application. To further understand the distribution of AI usage, a visualization was generated to illustrate how respondents are spread across different usage levels. This is presented in figure 2.

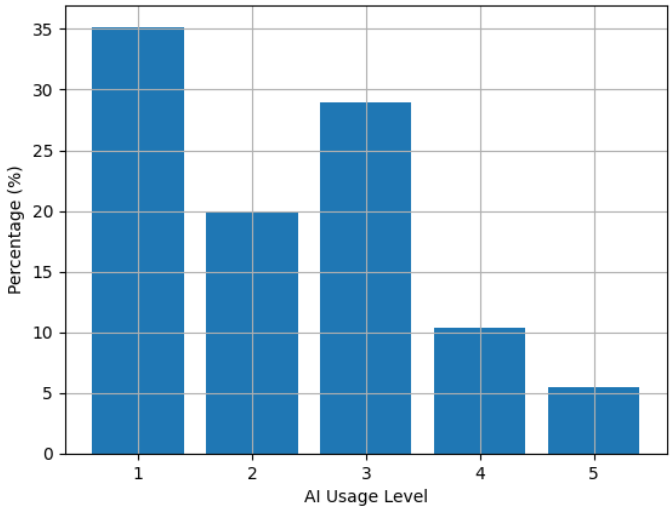


Figure 2 Distribution of AI Usage (Percentage)

The figure demonstrates that the majority of respondents are concentrated in the lower and middle usage categories, particularly at levels 1 and 3. Higher

levels of usage, such as levels 4 and 5, are significantly less frequent. This pattern suggests that while AI is present in everyday life, its intensive use is still not widespread among the respondents. To examine the relationships between variables, a correlation analysis was conducted. The results are presented in table 4 and visually supported by figure 3.

Table 4 Correlation Matrix

Variable	AI Usage	AI Trust	AI Knowledge	Future AI Use
AI Usage	1.00	0.36	0.29	0.38
AI Trust	0.36	1.00	0.25	0.45
AI Knowledge	0.29	0.25	1.00	0.40
Future AI Use	0.38	0.45	0.40	1.00

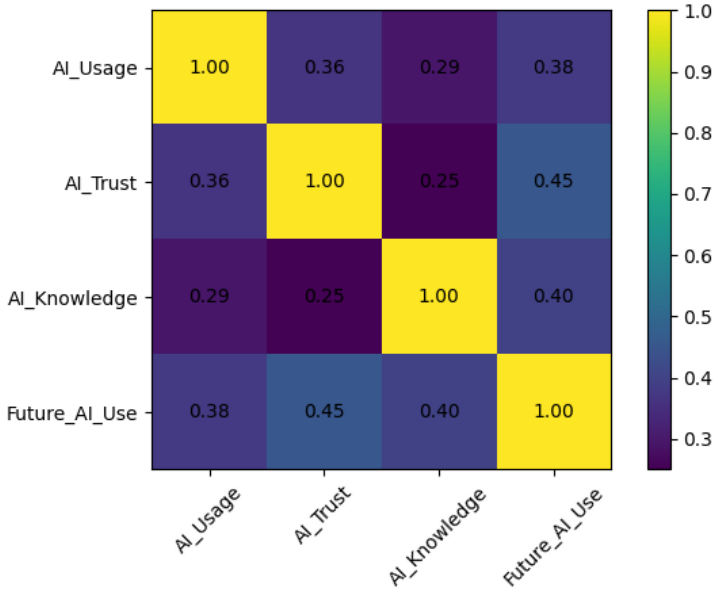


Figure 3 Correlation Matrix

The correlation results reveal moderate positive relationships among the studied variables. AI usage shows a positive correlation with AI trust (r = 0.36), AI knowledge (r = 0.29), and future AI use (r = 0.38). Among these relationships, the strongest correlation is observed between AI trust and future AI use (r = 0.45), indicating that trust plays a crucial role in shaping individuals' willingness to adopt AI technologies in the future. To provide a more detailed understanding of these relationships, scatter plots were generated to visualize the interaction between AI usage and each independent variable. These visualizations are presented in figure 4.

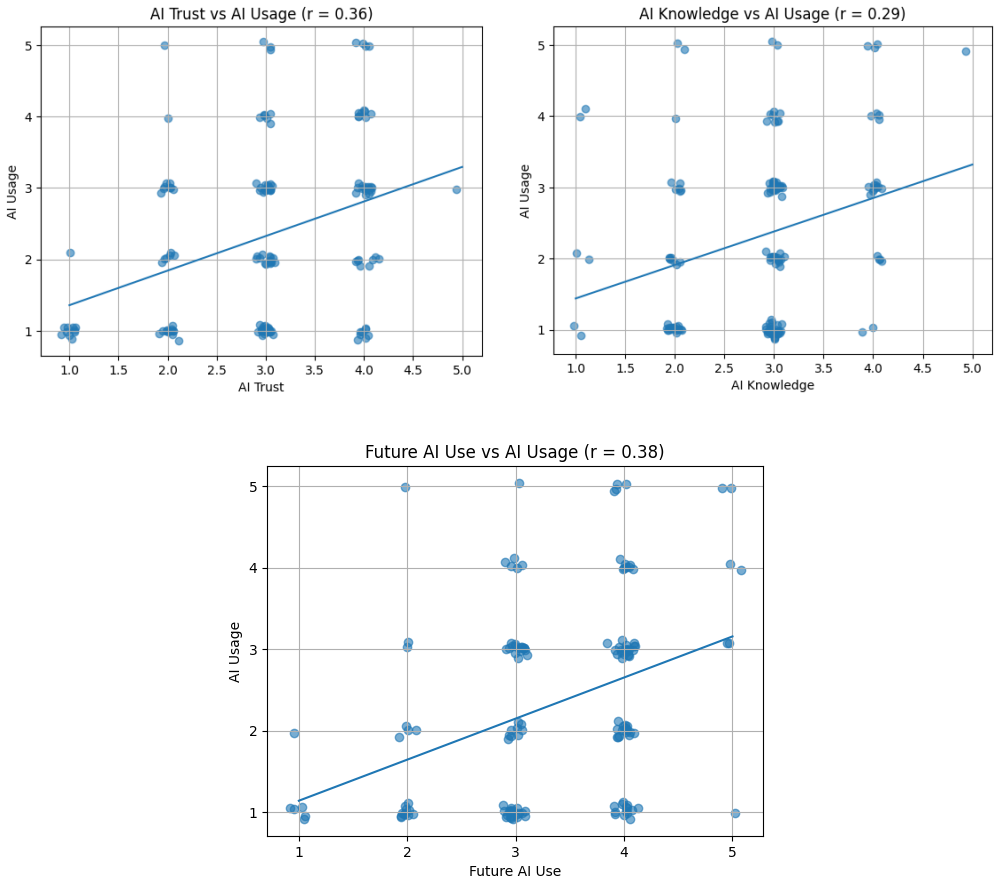


Figure 4 Relationships between AI Usage and Key Variables

The scatter plots illustrate a consistent positive trend across all relationships, as indicated by the upward slope of the regression lines. Although the relationships are not strong, the patterns suggest that higher levels of trust, knowledge, and future intention are associated with increased AI usage. These findings imply that behavioral engagement with AI is influenced not only by familiarity but also by users' perception and confidence in the technology. Overall, the results indicate that AI adoption within digital society is still developing. While current usage remains moderate, the positive relationships between trust, knowledge, and future intention highlight a gradual shift toward greater integration of AI into everyday social interactions.

Discussion

The findings of this study provide important insights into how artificial intelligence contributes to the transformation of social interaction patterns in digital society. The results indicate that AI usage is still at a moderate level, yet there is a clear tendency toward increased adoption in the future. This suggests that digital society is currently in a transitional phase, where individuals are gradually integrating AI into their daily lives but have not yet reached full dependence on algorithmic systems.

One of the most significant findings is the role of trust in shaping AI adoption.

The correlation analysis shows that trust has the strongest relationship with future AI use (r = 0.45), indicating that individuals are more likely to engage with AI technologies when they perceive them as reliable and beneficial. This aligns with broader technological adoption theories, which emphasize trust as a critical factor in reducing uncertainty and encouraging behavioral acceptance. In the context of digital society, trust becomes a key mechanism through which algorithmic systems gain influence over human interaction.

In contrast, knowledge of AI appears to have a weaker relationship with usage (r = 0.29), suggesting that individuals do not necessarily need a deep understanding of AI to engage with it. This reflects a shift in digital behavior, where usability and accessibility outweigh technical comprehension. In other words, digital society is not driven by expertise but by exposure and habitual interaction. This finding highlights the increasing normalization of AI technologies, where users interact with complex systems without fully understanding their underlying mechanisms.

Another important insight is the relationship between current AI usage and future intention (r = 0.38). This indicates that repeated interaction with AI reinforces its continued use, forming a behavioral pattern that aligns with the concept of algorithmization. As individuals become more accustomed to AI-mediated environments, their reliance on these systems increases, gradually embedding algorithms into everyday decision-making processes.

Taken together, these relationships suggest the emergence of a self-reinforcing cycle in digital society. Trust encourages usage, usage strengthens future intention, and repeated engagement further normalizes the presence of AI in social life. This cycle illustrates how algorithmic systems do not merely support human interaction but actively shape and structure it. As a result, social interactions are increasingly mediated by technological systems rather than being purely human-driven.

However, the moderate strength of the correlations indicates that this transformation is not yet fully established. Human agency still plays a significant role, and individuals retain a degree of independence from algorithmic influence. This suggests that digital society is still evolving, and the process of algorithmization is ongoing rather than complete.

Conclusion

This study examined the impact of artificial intelligence on interaction patterns within digital society by analyzing the relationships between AI usage, trust, knowledge, and future intention. The findings reveal that AI adoption is influenced by multiple factors, with trust emerging as the most significant driver, followed by future intention and knowledge.

The results show that while current AI usage remains at a moderate level, there is a clear tendency toward increased adoption in the future. This indicates that digital society is moving toward a more algorithm-driven structure, where interactions are increasingly shaped by artificial intelligence systems. At the same time, the relatively weak influence of knowledge suggests that individuals do not need a deep understanding of AI to participate in this transformation, reinforcing the idea that digital engagement is driven more by experience than by expertise.

Furthermore, the study highlights the presence of a reinforcing cycle in AI

adoption, where trust leads to usage, and usage leads to future dependence. This cycle contributes to the gradual integration of AI into everyday social interactions, supporting the concept of the algorithmization of social life. However, the moderate strength of the relationships also indicates that this transformation is still in progress and has not yet fully replaced traditional forms of human interaction.

In conclusion, artificial intelligence plays a growing but not yet dominant role in shaping digital society. Its influence is expanding through patterns of trust, repeated use, and future expectation, suggesting that algorithmic systems will continue to become more embedded in social life over time. Future research is recommended to explore these dynamics using more advanced analytical methods, such as regression or structural equation modeling, to better understand causal relationships and the long-term implications of AI-driven social transformation.

Declarations

Author Contributions

Conceptualization: G.M.F., S.W.; Methodology: S.W.; Software: G.M.F.; Validation: G.M.F., S.W.; Formal Analysis: G.M.F., S.W.; Investigation: G.M.F.; Resources: S.W.; Data Curation: S.W.; Writing Original Draft Preparation: G.M.F., S.W.; Writing Review and Editing: S.W., G.M.F.; Visualization: G.M.F.; All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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