

Research Article

Challenges of Waste Disposal and Performance of Management Authorities in Akure Markets, Nigeria

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Abstract

The management and disposal of market waste has become an issue of concern to various environmental stakeholders. Due to the potential health risk of solid waste on human and environmental health, the research becomes imperative. The study area is the centre of a commercial city of Akure. The object of this research work was to investigate the key factors contributing to poor waste disposal practices and evaluates the performance of waste management authorities in major markets in Akure, Nigeria. The study adopted a mixed-method approach; data were collected through structured questionnaires administered to 284 (traders and buyers) respondents across selected markets. The findings reveal that irregular waste collection, inadequate disposal facilities, and weak enforcement mechanisms are primary causes of poor waste disposal. Furthermore, the performance of waste management authorities was found to be suboptimal due to infrequent evacuation schedules, insufficient manpower, and lack of community engagement. The study recommends improved funding, stronger enforcement of sanitation policies, and increased participation of private waste contractors to enhance market sanitation.

Keywords

Market Waste, Waste Disposal Behavior, Waste Management Agencies, Akure Nigeria, Urban Sanitation

1. Introduction

Market waste makes up a sizable amount of municipal solid waste in rapidly urbanizing cities throughout sub-Saharan Africa, according to the World Bank [15]. Markets in cities like Akure, Nigeria, are seeing an increase in the amount of poorly managed waste as commercial activities grow. This is causing blocked drainage systems, offensive odors, and a higher risk of illness. This study is significant because it examines markets, which are frequently disregarded in waste management planning despite being social and economic hubs where thousands of people interact daily. In order to develop inclusive and sustainable urban environmental poli-

cies, it is essential to look into the reasons behind inadequate waste disposal as well as the institutional performance of waste management authorities.

Previous research has shown that despite efforts by waste authorities, market sanitation remains a persistent problem due to infrastructural gaps, weak enforcement, and behavioral issues (Effiom, Margaret et al., Nnaji, [4, 7, 9]. Kehinde and Adeola [5] noted that traders in Ibadan markets often dump refuse into drainage channels or burn it due to lack of bins and irregular collection. Similarly, Amalu and Ajake [3] identified inconsistent waste evacuation and limited public

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Received: 7 July 2025; Accepted: 30 July 2025; Published: 9 December 2025



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participation as recurring barriers. However, most existing studies focus broadly on urban waste or household refuse, with limited attention to how the performance of waste management institutions influences market sanitation outcomes. Recent studies by Odiana and Olorunfemi and Ajama and Ofoezie [10, 11] call for location-specific assessments of authority efficiency, especially in high-density market environments.

According to Ajibuah [2], there is still a significant knowledge vacuum regarding the connection between institutional inefficiency and traders' persistently poor, wasteful behavior in Nigerian markets. Few studies provide a comprehensive understanding of how poor trader engagement, irregular collection, and weak institutional enforcement reinforce one another, despite some focusing on infrastructure Ndum, and Sina on trader attitudes, [8, 13].

By critically analyzing the causes of inadequate market waste disposal and the operational effectiveness of Akure's waste management authorities, this study seeks to close that gap and provide practical policy recommendations for both public and private actors.

The study used a mixed-method design, integrating quantitative and qualitative data, to address this. Using systematic random and purposive sampling techniques, 284 respondents, including traders and buyers, were chosen from Akure's main markets. Data on infrastructure, institutional performance, and waste practices were gathered using structured questionnaires and observational checklists. Descriptive statistics and chi-square tests were used to analyze the data and look at the connections between perceptions of management authority performance, waste disposal behavior, and income. This method adds to the body of knowledge on urban environmental governance in sub-Saharan Africa and allows for a grounded understanding of the realities in Akure's markets.

1.1. Methods

In order to evaluate the factors causing inadequate waste disposal and the effectiveness of waste management authorities in a few markets in Akure, Nigeria, this study used a mixed-method research design that combined quantitative and qualitative techniques. In order to facilitate the triangulation of findings and enhance the validity of results through both statistical analysis and observational insight, a mixed-method approach was chosen.

1.2. Study Area and Population

The study was conducted in Akure, the capital of Ondo State, Nigeria. Akure lies between longitudes 5°14' and 5°15' E of the Greenwich Meridian and latitudes 7°15' and 7°17' N of the Equator. It is an urban center that hosts a variety of traditional, neighborhood, and spontaneous markets such as Oja Oba, Isikan, NEPA, Ijapo, Isolo, Afunbiowo, and Leo markets. These markets serve as major hubs for daily trade,

attracting a large number of sellers and buyers. The target population for this study consisted of *market traders and buyers* within these markets.

Based on the 2006 census figure of 306,268 and using a population growth rate of 3.18%, the projected population of Akure in 2024 was estimated to be 521,417. From this, a total of 1,408 shops across the selected markets were identified, forming the sampling frame for the study.

1.3. Sampling Techniques and Sample Size

A systematic random sampling technique was employed to select 142 traders from the identified 1,408 market shops. The sampling interval was calculated as approximately every tenth shop. In addition, a *purposive sampling technique* was used to select 142 buyers found within the market premises, ensuring that all relevant stakeholders in waste generation and disposal were represented. Thus, a total of 284 *questionnaires* were administered in the study.

Table 1. Sample Size.

Market	No. of Shops	Sample Size (Traders)
Oja-Oba	563	56
Isikan	216	22
Leo	37	4
Ijapo	76	8
Isolo	60	6
Afunbiowo	240	24
NEPA	216	22
Total	1,408	142

Source: Author's compilation, 2024

1.4. Research Instruments and Data Collection

Two main instruments were employed to collect data: a *structured questionnaire* and *field observation*. The questionnaire consisted of both closed and open-ended questions grouped into sections based on the research objectives. Questions covered topics such as waste disposal behavior, availability and adequacy of waste management infrastructure, and respondents' perceptions of the performance of waste authorities. The questionnaires were pre-tested during a pilot survey to ensure clarity, consistency, and relevance.

Observational data were collected using a checklist and photographs to document the state of waste collection points, availability of bins, and visible signs of neglect or inefficiency in waste management within the markets.

Data Sources

- 1) *Primary data*: Collected through the administered questionnaires and field observations.
- 2) *Secondary data*: Sourced from government ministries and agencies such as the Ondo State Waste Management Board. These included information on market sanitation policies, waste evacuation schedules, and management charges.

2. Data Analysis

The quantitative data collected were analyzed using the *IBM Statistical Package for the Social Sciences (SPSS, 22)*. Descriptive statistics (frequencies, percentages, and charts) were used to present the socio-economic characteristics of respondents and general patterns of waste disposal. For inferential analysis, *Pearson Chi-Square* tests were used to determine the relationship between income level and waste disposal methods, as well as between the frequency of waste collection and waste disposal practices. Results were presented in tables and interpreted in the context of the research objectives.

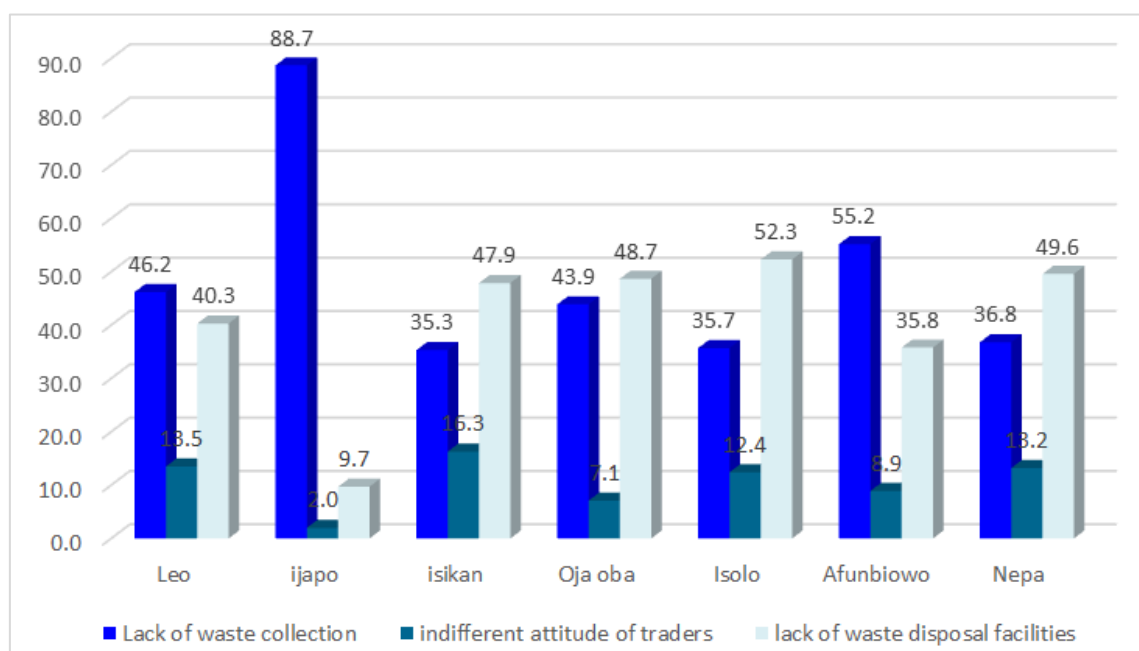
3. Results and Discussion

Factors Contributing to Poor Waste Disposal in Akure Markets

Improper waste disposal could pose heat risks and environmental challenges. Most of the drainage channels in markets, foul smells, and dirty scenery are a resultant effect of poor waste disposal methods practiced by traders and buyers

who patronize them. Information gathered from respondents shows that lack of timely waste collection by waste agencies was a major cause of poor waste disposal methods among the traders (46.2%, 88.7%, 35.3, 43.9%, 35.7%, 55.2%, and 36.8). Traders dispose of their waste when the bin or bag for collection is full and this causes a nuisance to environmental sanitation. Some of the respondents submitted that indifferent attitude of traders is also the cause for poor waste disposal (13.5%, 2%, 16.3%, 7.1%, 12.4%, 8.9% and 13.2%) and lack of waste disposal facilities (40.3%, 9.7%, 47.9%, 48.7, 52.3%, 35.8%, and 49.6%), majority of the market do not have waste disposal facilities to empty their bins when they are full. This also is one of the challenges that should be addressed to enhance proper waste management among traders.

According to Ajama and Ofoezie [1], research on the characteristics of market solid waste in Akure revealed that there is no formal arrangement for waste evacuation in the Odopetu market, and in Oja Oba, where a management authority exists; it took over a week to evacuate waste generated and stored in more than half of the stalls, indicating poor waste management. Traders at Ijapo and Afunbiowo markets also complained about the lack of services by the waste authorities in their markets. Some of the traders interviewed that it had been months since they had seen them come to the market to collect waste. Olukanni et al. [12] also noted local factors that affected solid waste collection, such as inadequate infrastructure for waste management, people's attitudes toward waste management, lax policies, a lack of funding to support the waste management industry, household economic status, and facilities located haphazardly.



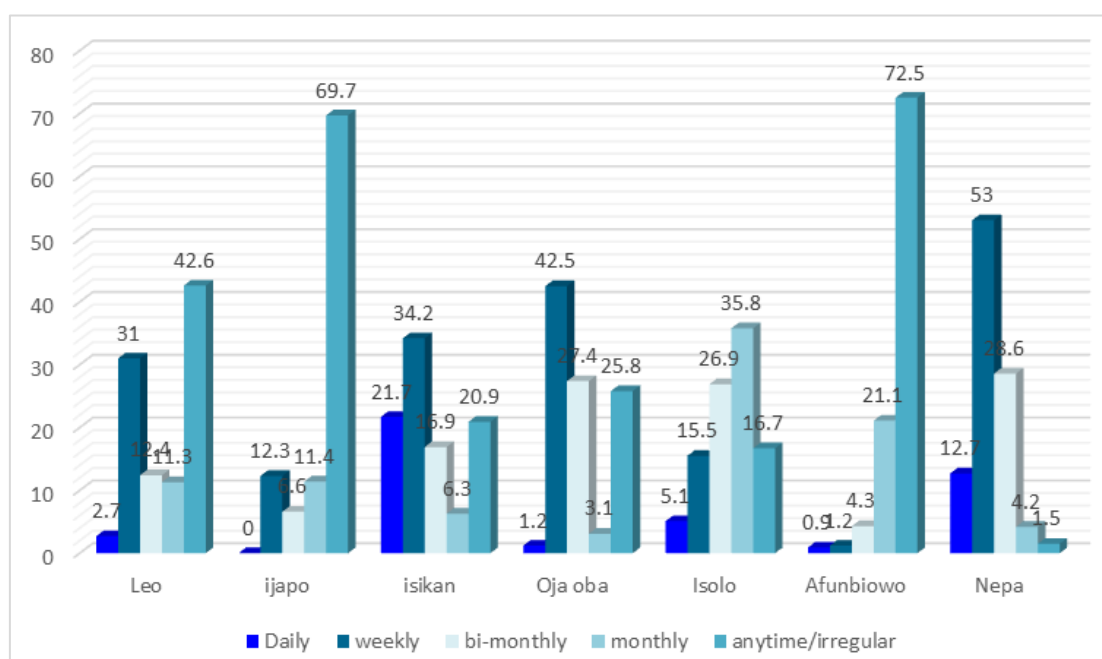
Source: Author's Fieldwork 2024

Figure 1. Factors responsible for poor waste disposal in the study areas.

Management Authorities

Figure 1 shows that majority of respondents at the Ijapo and Leo markets indicate that waste collectors do not have a fixed for waste collection. Traders at Ijapo markets complained that their waste is left unpacked from the compound. One of the traders submitted that the waste management authorities have not been to the market in over four months as of the time of data collection. At Isikan, Oja-Oba, Isolo, Afunbiowo, and NEPA markets, respondents show that waste management collects waste at weekly intervals. However, information gathered from the waste management authorities shows that the collection of waste is daily. In addition, the bi-monthly collection of waste is prominent in the Isolo market. While some

respondents also indicate that, they collect waste monthly. Amalu and Ajake (2014) reported similar irregularities in waste management agencies operation in Enugu, respondents show dissatisfaction with the standard and system of waste management in the study area representing 93 percent of the study population. Traders may resort to dumping of waste in unauthorized areas or waterways due to lack of regular collection services Kumar et al.. Irregular collection can lead to accumulation of waste, resulting in open burning, which poses health and environmental risks (World Bank, 2018). Irregular collection could triggered traders into unlawful waste disposal methods, leading to mixed waste disposal and reduced recycling opportunities UNEP, [3, 6, 14, 15].



Source: Author's Fieldwork 2024

Figure 2. Frequency of waste collection.

Source: Author's Fieldwork 2024

Performance of the waste management authorities

Table 2. Assessment of the performance of the waste management authorities.

No.	Performance of waste authorities	Mean	Rank
1	Waste collection	1.5	2 nd
2	Supervision of market sanitation exercise	3.23	1 st
3	Provision of waste facilities	1.1	4 th
4	Interval of waste collection	1.23	3 rd

Source: Author's Fieldwork 2024

Respondents were interviewed to assess the performances of the waste management authorities in the study areas. The result shows that they perform more in market sanitation exercise ranking first with a mean of 3.23. According to the information gathered the waste management authorities, ensured each trader adhered to the sanitation exercise, and defaulters were penalized. In addition, information gathered from respondents reveals, that traders clean their premises a day before the general sanitation exercise and wait for inspection.

Waste collection activities rank second in the table because the respondents submitted that they collect waste from the market or designated dumpsites as applicable to each market. However, the interval of waste collection ranks third, showing that the traders are not satisfied with their operation as regards the interval of waste collection. Some of the respondents noted that they should work more regularly to ensure waste is packed out of the markets in a reasonable time to ensure the safety of both traders and buyers. In the countries of Sub-saharan Africa, waste collection and dis-

posal have been recognized as a significant problem. Yet it is arguably the most challenging operational issue that majority of Nigerian cities deal with Ogwueleka, [11]. The provision of waste collection facilities should also be looked into to ensure proper waste storage by traders before the waste van comes to collect it.

Assessment of Waste Management Authorities on the Interval of Waste Collection

Data analysis revealed that the majority of the respondents show that the interval of waste collection is poor. One of the major problems as revealed by the waste management authorities is the unavailability of Van for their operation. Vehicles used to evacuate waste from the market are rented vehicles from private organizations. Insufficient funds is also an impediment to the effective performance of waste authorities in Akure. 45% of respondents at the Ijapo market indicate that the interval of waste collection is good enough and one of the major issues of improper waste disposal.

Private Agencies Involvement in Market Waste

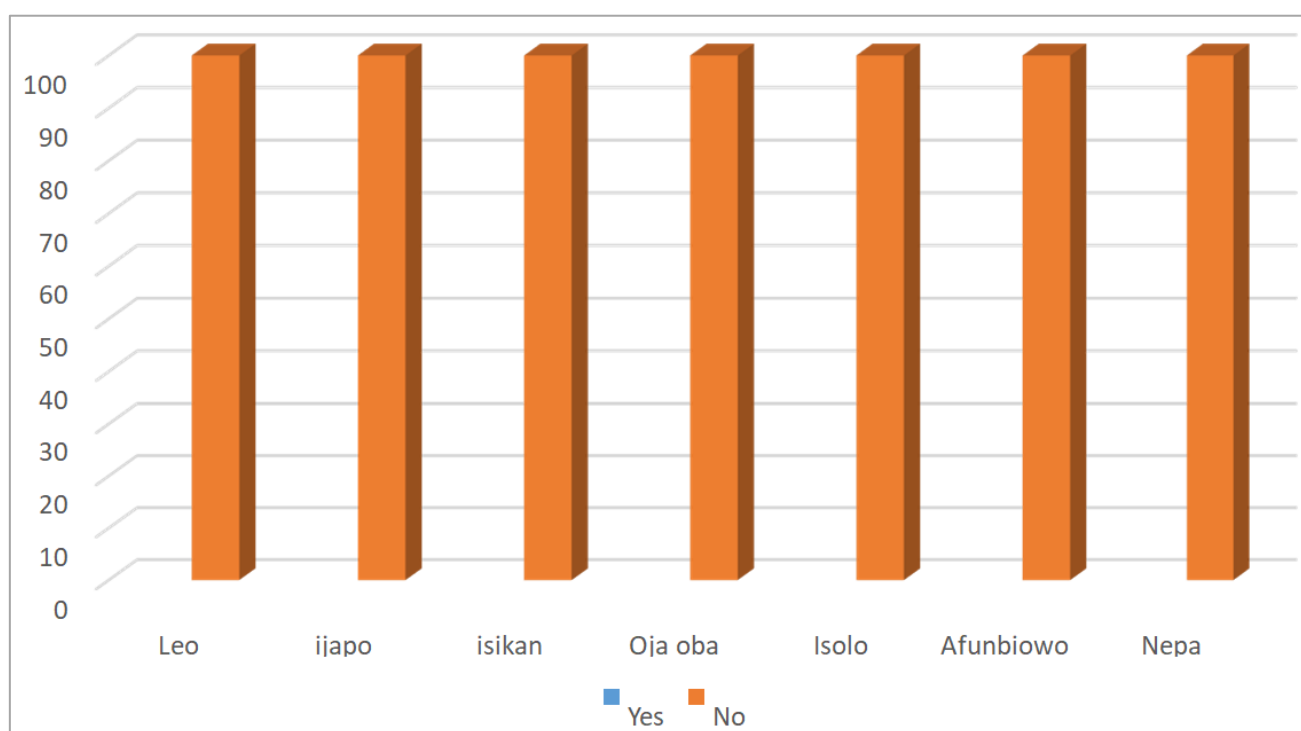


Figure 3. Private waste collection agencies in the study areas.

Figure 3 shows that there is no private agency involvement in evacuation of waste from markets in the study area. According to source from Ondo State waste management authorities, private waste collection agency do not interfere with collection of market waste because they are public waste. Public waste are waste that cannot be traced to a particular person. The responsibilities of evacuating waste from markets is solely on the waste management authorities.

Source further explained that the private agencies collect waste from household, which is on weekly basics. This issue should be solved to ensure more agencies could participate in waste collection, since the waste authorities do not have the necessary facilities that evacuate waste.

Hypothesis 1

H_0 : There is no significant relationship between the frequency of waste collection and methods of wastedisposal.

H_1 : There is a significant relationship between the frequency of waste collection and methods of waste disposal.

The Spearman rank Correlation (Table 3) with $r_s = 0.207^{**}$ indicated that there is statistically significant relationship between the frequency of waste collection and the method of waste disposal. This confirmed that frequent waste collection by waste management authorities would improve the waste disposal attitude and methods of people. Indiscriminate disposal of waste along roadside, dumpsites is

a result of ineffective operative mode of waste collector in the study area. Ogwueleka, [11] submitted that waste collection is arguably the most challenging operational issues that majority of Nigerian cities deals with; market areas also affected in Akure. The current cholera plague in the Nigeria emanated from poor hygiene and proper attention should be focused transportation of waste from markets areas to avoid outbreak of diseases in the core of Akure.

Table 3. Correlation of waste disposal methods by Frequency of waste collection.

			Frequency of waste collection	Methods of waste disposal
Spearman rank correlation	Frequency of waste collection	Correlation Coefficient	1.000	0.207**
		Sig. (2-tailed)	.	.000
		N	284	284
	Methods of waste disposal	Correlation Coefficient	0.207**	1.000
		Sig. (2-tailed)	.000	.
		N	284	284

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4. Correlation of income by methods of waste disposal.

			Monthly income	Methods of waste disposal
Spearman rank correlation	Monthly income	Correlation Coefficient	1.000	-.125*
		Sig. (2-tailed)	.	.035
		N	284	284
	Methods of waste disposal	Correlation Coefficient	-.125*	1.000
		Sig. (2-tailed)	.035	.
		N	284	284

*. Correlation is significant at the 0.05 level (2-tailed).

The tables shows that the method of waste disposal negatively correlated with monthly income, $r = -.125$. This shows the method of waste disposal is not determined by the income of the traders in the study areas. However, there is statistical significance (p-value of 0.35) that as income increases, there is the possibility of adopting better waste disposal methods that will not constitute a nuisance to the environment and human health. This shows the willingness to adopt better waste disposal methods if available. The hypothesis testing indicates that income alone is not a determining factor rather the efficiency of authorities in handling waste evacuation properly.

4. Conclusion

This study examined the underlying factors contributing to poor waste disposal in Akure markets and assessed the performance of waste management authorities responsible for maintaining market sanitation. Findings revealed that irregular waste collection, insufficient disposal infrastructure, and negative behavioral patterns among traders are the most critical challenges. Additionally, the performance of waste management authorities was generally rated as poor, particularly in areas related to collection intervals and the provision of waste bins.

The test of hypotheses confirmed that both the *frequency of waste collection* and *income levels of traders* significantly influence the choice of waste disposal methods. These findings suggest that structural and socio-economic barriers jointly drive unsanitary waste practices in market environments.

The poor state of sanitation in Akure's markets reflects not only infrastructural gaps but also institutional inefficiencies and limited enforcement. Without timely waste collection and adequate facilities, even well-intentioned traders struggle to dispose of waste properly. This underscores the urgent need for integrated, multi-stakeholder solutions that combine public oversight, private sector involvement, and community education.

5. Recommendations

1) Increase the Frequency of Waste Collection

Waste management authorities should adopt a more consistent and reliable collection schedule preferably daily or every two days, to prevent waste accumulation and illegal dumping.

2) Provide Adequate Waste Disposal Infrastructure

The government and local agencies should provide more waste bins and central collection points within and around markets. This will encourage proper waste handling and reduce roadside dumping.

3) Strengthen Supervision and Enforcement

Sanitation laws must be enforced more rigorously, with regular inspections, penalties for non-compliance, and the establishment of environmental task forces in each market.

4) Promote Public-Private Partnerships (PPP)

The Ondo State Waste Management Board should collaborate with licensed private waste contractors to bridge service delivery gaps. This approach can improve efficiency and expand coverage.

5) Implement Income-Sensitive Strategies

Since disposal behavior is partly influenced by income, authorities should consider subsidizing waste management services in low-income trading zones and integrating waste education into community programs.

6) Enhance Public Awareness and Trader Engagement

Conduct regular sensitization campaigns using market leaders, trade unions, and community influencers to change attitudes and promote collective responsibility for sanitation.

These recommendations, if implemented, will significantly improve sanitation in Akure's markets and contribute to broader urban sustainability goals.

Author Contributions

Olaleru Ezekiel Tope: Conceptualization, Formal Analysis, Investigation, Methodology, Resources, Software, Writing – original draft

Olukayode Olawumi Rotowa: Supervision, Validation, Writing – review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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