

# Impact of Indiscriminate Burials on Environmental Degradation.

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## Abstract:

The research work draws a correlation between indiscriminate Burials within residential neighborhoods' and environmental degradation. With the aid of descriptive statistics and correlation, the research established a positive correlation between indiscriminate burials and environmental degradation. In other words, indiscriminate burials impacts negatively on the environment. The research also establishes threat on the environmental sustainability through indiscriminate burials. The research opines the need for the government at various levels along with their agencies to control the menace of indiscriminate burial through legislation and sensitization workshops.

**Keywords:** Indiscriminate Burials; Cemetery; Environmental degradation; Impact.

## Introduction:

Burial practices have been an integral part of human culture and rituals for centuries, serving as a means of honoring the deceased and providing closure for the living (Park, 2020; Matende, 2022). However, as populations grow and urbanization intensifies, the practice of indiscriminate burial and improperly managed burial practices has emerged as a significant environmental concern (Joseph, 2020). Similar to cemeteries, these indiscriminate

burials are identified as potential pollutant reservoirs (Dippenaar 2014). The decomposition of corpses releases organic and inorganic substances into the soil, which

can leach into groundwater (Francoet al., 2022). Neckel et al. (2017) and Abia et al. (2019) specifically highlight the risk of bacterial contamination in water sources due to nearby burial sites. Burst PVC pipes used for water distribution can become contaminated, leading to the spread of waterborne diseases such as diarrhea, cholera, and typhoid. The study identifies a direct link between burial practices and increased incidence of diseases. Pathogens from decomposing bodies can enter the water supply, posing severe health risks to the local population. This contamination can lead to outbreaks of epidemics, particularly in densely populated areas. Olajide and Abiodun (2013) among numerous studies reported properties with visible graves are less attractive to buyers and tenants, resulting in devaluation. The presence of graves within residential neighborhoods creates a psychological and physical barrier to property transactions, affecting the local real estate market.

Environmental degradation is the deterioration of the environment through depletion of resources such as quality of air, water and soil; the destruction of ecosystems; habitat destruction; the

extinction of wildlife; and pollution (Neckel et al., 2017; Matende et al., 2022).

Despite the evident dangers, the practice persists due to cultural traditions, lack of proper burial sites, and inadequate regulatory frameworks. Addressing this issue requires a comprehensive understanding of its environmental impacts and the development of effective strategies to mitigate these risks. The aim of this study is therefore to evaluate the correlation between indiscriminate burials within residential neighborhoods and environmental degradation.

**Methodology:  
Research Design**

This study employs a descriptive survey research design to evaluate the impacts of indiscriminate burials on environmental degradation. The primary data collection method involves structured questionnaires administered to a sample of respondents, including community members, environmental experts, and health officials within Southwest Nigerian regions affected by indiscriminate burials using purposive sampling technique (See Table 1). The study uses the Relative Importance Index (RII) methodology to analyze the responses and rank the perceived impacts. A total of 200 respondents were targeted to ensure a diverse and representative sample. However, only 89% of valid data were retrieved from the respondents. The impact assessment in this study includes items designed to measure the perceived impacts of indiscriminate burials on environmental degradation. Respondents rated the importance of various impacts on a 5-point Likert scale, where 1 = Very Low Impact and 5 = Very High Impact.

Table 1: Pattern of Questionnaire Distribution

S/N	Class Of Respondent	Frequency	Percentage (%)
1.	Community Members	77	43.26
2.	Environmental Experts	68	38.20
3.	Health Officials	27	15.17
4.	Others	6	3.37
	<b>TOTAL</b>	<b>178</b>	<b>100.00</b>

Source: Field Survey by Authors, 2024

**Relative Importance Index (RII) Method**

The Relative Importance Index (RII) was used to analyze the data collected from the questionnaires. The RII is a non-parametric technique widely chosen for its effectiveness in ranking and prioritizing factors based on respondents' subjective judgments. It is particularly suitable for assessing the relative importance of different criteria based on respondents' perceptions. The RII for each factor is calculated using the formula:

$$RII = \frac{\sum W}{A \times N}$$

Where:

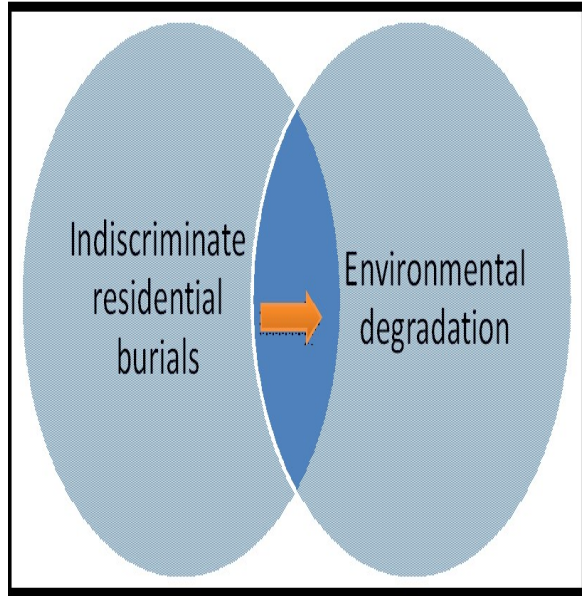
W is the weight assigned to each variable by respondents (ranging from 1 to 5),

A is the highest possible weight (i.e., 5),

N is the total number of respondents.

The RII values range from 0 to 1, with higher values indicating greater perceived importance.

Figure 1: Theoretical Framework showing the relationship between the Dependent and Independent Variables



Source: Field Survey by Authors, 2024

**Data Analysis**

The data collected from the questionnaires were analyzed using the RII to calculate the perceived impact of each factor contributing to environmental degradation due to indiscriminate burials. The impacts were ranked based on their RII values, allowing the identification of the most critical issues as perceived by the respondents (Table 2). Relationships between the environmental degradation factors and indiscriminate burial was accessed using Pearson's correlation coefficient using SPSS software

Table 2: Classification of respondents perceived impact based on RII

High (H) 0.8 < RII < 1.0
High-Medium (H-M) 0.6 < RII < 0.8
Medium (M) 0.4 < RII < 0.6
Medium-Low (M-L) 0.2 < RII < 0.4
Low (L) 0.0 < RII < 0.2

**Analysis and Results**

**Relative Importance Indices (RII)**

The perception of community members, environmental experts, and health officials on environmental degradation caused by indiscriminate burials were analyzed using the Relative Importance Indices (RII)

1. Indiscriminate burial within residential neighborhood can have severe environmental implications?

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{811}{5 \times 178}$$

$$RII = 0.911$$

2. Indiscriminate residential burial is capable of contaminating ground water.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{709}{5 \times 178}$$

$$RII = 0.797$$

3. Decomposing bodies can release toxic substances, heavy metals and others pollutants.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{767}{5 \times 178}$$

$$RII = 0.862$$

4. Indiscriminate residual burials can lead to air pollution.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{735}{5 \times 178}$$

$$RII = 0.826$$

5. Burials near water sources or wetlands can harm aquatic ecosystem.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{685}{5 \times 178}$$

$$RII = 0.770$$

6. Burials near water sources or wetlands can threaten biodiversity.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{774}{5 \times 178}$$

$$RII = 0.870$$

7. Indiscriminate burials can lead to a decline in property values.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{821}{5 \times 178}$$

$$RII = 0.922$$

8. Indiscriminate burials can lead to a decline in property values.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{773}{5 \times 178}$$

$$RII = 0.869$$

9. Burial within residential neighborhood can lead to public health risks.

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{784}{5 \times 178}$$

$$RII = 0.881$$

10. Improper burials within residential neighborhood can lead to decline in neighborhood aesthetics and community well-being

$$RII = \frac{\sum W}{A \times N}$$

$$RII = \frac{750}{5 \times 178}$$

$$RII = 0.843$$

The findings presented in Table 2 demonstrate the perceived significant impact of indiscriminate burial practices on environmental degradation, supported by high Relative Importance Indices (RII). Contemporary studies on the impact of burial within African countries confirmed negative effects of indiscriminate burial on the environment particularly in areas with high permeability and poor geological barriers (Dippenaar, 2014 and Ojo et al., 2022). Indiscriminate burial within residential neighborhoods were perceived to have severe environmental implications (0.911). Empirical evidence shows that leachates from decomposing bodies percolate through the soil, reaching groundwater sources contamination poses serious health risks to communities relying

on groundwater for drinking and agriculture. The potential of indiscriminate burial within residential buildings to contaminate groundwater was perceived to be high (0.797). This is corroborated by Neckel et al., 2017, which show that decomposition of human body leaches harmful substances such as ammonia, nitrates, and heavy metals into groundwater, posing risks to water quality and public health (Neckel et al., 2017). The finding that decomposing human bodies can release toxic substances (0.862), is consistent with Caraballo (2014) assertion that decomposing corpses of human being introduce various contaminants into the environment, including organic compounds and heavy metals from embalming fluids and decomposition. Decomposition from the dead bodies are the primary causes of increasing microbial activity in their surrounding substrate and is associated with the release of persistent organic compounds (Janaway, 2013). Therefore the public health risks associated with burial practices is significantly (0.881) highlighted as the potential mode of disease transmission through contaminated groundwater and the attraction of disease-carrying insects to improperly managed burial sites.

The perception that indiscriminate burials in the residential areas led to air pollution (0.826) showed that decomposition process could have led to the release of gases and odors that affect air quality, particularly in the densely populated areas. Similarly, the potential harm perceived from indiscriminate burial to aquatic ecosystems (0.770) is supported by Nyström's (2012) and Ifeoluwa (2019) findings that solid waste from human activities contaminants aquatic lives, affecting aquatic biodiversity. Hence strongly perceived (0.870) as a threat to biodiversity of aquatic life. Gwenzi and Chaukura (2018) emphasis on the ecological risks posed by contaminants from burial disrupt aqua systems and species.

The decline in property values due to indiscriminate burials reflects high public perception (0.922) and is supported by the Olajide and Abiodun (2013) findings that burials within residential neighborhoods significantly diminish or entirely eliminate the economic value of the property. A house containing a tomb is often perceived as a family-owned asset, which hinders its attractiveness and marketability in the real estate market. Such properties are typically seen as less desirable by potential buyers due to cultural, emotional, and practical considerations.

The decline in neighborhood aesthetics and community well-being due to improper burials (0.843) is consistent with the Quinton and Duinker, (2019) findings that the presence of burials within residence can affect community perceptions and quality of life, particularly in urban settings where space is limited. The presence of a tomb often create a sense of unease, affect the aesthetic appeal of the property, and impose legal or religious restrictions on future modifications or sales. Consequently, these contribute to a substantial depreciation in the property's market value, making it challenging to sell or rent compared to similar properties without such encumbrances (Olajide & Abiodun, 2013).

### **Relationships between indiscriminate burial and environmental degradation factors**

Indiscriminate burial practices show strong correlations with multiple environmental impacts, such as groundwater contamination (0.704), release of toxic pollutants (0.740), and air pollution from residual burials (0.696). Groundwater contamination has a correlation of 0.704 with severe environmental implications and is strongly correlated with burials near water sources or

wetlands (0.976). Substantial evidence revealed that decomposing bodies release harmful substances, including ammonia, nitrates, and heavy metals such as lead, mercury, and cadmium can also leach from decomposing bodies. These metals are toxic and can cause various health problems, including kidney damage, neurological disorders, and cancer (Neckel et al., 2017). Fiedler et al. (2012) revealed that in the decomposition process of dead bodies, gaseous and liquid byproducts like carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), hydrogen sulfide (H<sub>2</sub>S), methane (CH<sub>4</sub>), ammonium (NH<sub>4</sub>), nitrates (NO<sub>3</sub>), and biogenic amines accumulate in the grave area and sometimes released into the environment. Indiscriminate burials can lead to a decline in property values (0.803) and public health risks (0.988). An indiscriminate burial practice does not only affect the environment but also have socio-economic impacts. Research has shown that burial sites within residential areas can reduce property values and pose health risks due to the potential spread of diseases (Neckel et al., 2017; Matende et al., 2022; Olajide & Abiodun, 2013). Improper burials attracting insects that spread diseases (0.808) further emphasize the public health risks associated with indiscriminate burials. This corroborates Williams (2009) findings that highlight the role of burial practices in attracting disease vectors, increasing the risk of epidemics. Decomposing bodies are capable of releasing pathogenic microorganisms into the soil and groundwater. Studies by Kandoli et al. (2019) and Gwenzi (2020) showed that pathogens such as Clostridium, Salmonella, and Escherichia coli can survive in the decomposition environment, posing risks of groundwater contamination and subsequent disease outbreaks

**Table 3: Relative Important Indices on Perceived Impact of Indiscriminate Burial on Environmental Degradation**

S/N	Questions	RII	ImportanceLevel
1	Indiscriminate burial within residential neighborhood can have severe environmental implications.	0.911	High (H)
2	Indiscriminate residential burial is capable of contaminating ground water.	0.797	High-Medium (H-M)
3	Decomposing bodies can release toxic substances, heavy metals and others pollutants.	0.862	High (H)
4	Indiscriminate residual burials can lead to air pollution.	0.826	High (H)
5	Burials near water sources or wetlands can harm aquatic ecosystem.	0.770	High-Medium (H-M)
6	Burials near water sources or wetlands can threaten biodiversity.	0.870	High (H)
7	Indiscriminate burials can lead to a decline in property values.	0.922	High (H)
8	Improper burials can attract insects spreading diseases.	0.869	High (H)
9	Burial within residential neighborhood can lead to public health risks.	0.881	High (H)
10	Improper burials within residential neighborhood can lead to decline in neighborhood aesthetics and community well-being.	0.843	High (H)

**Table 4: Relationship between Indiscriminate Burial and Environmental Degradation**

Correlations									
	Indiscriminate burial has severe environmental implications.	Indiscriminate burial contaminate ground water	Indiscriminate burial release toxic pollutants.	Residual burials cause air pollution.	Burials near water sources or wetlands can harm aquatic ecosystem.	Burials near water sources or wetlands can threaten biodiversity.	Indiscriminate burials can lead to a decline in property values .	Improper burials can attract insects spreading diseases.	Burial within residential neighborhood can lead to public health risks.
Indiscriminate burial has severe environmental implications.	1.000								
Indiscriminate burial contaminate ground water	0.704	1.000							
Indiscriminate burial release toxic pollutants	0.740	0.628	1.000						
Residual burials cause air pollution.	0.696	0.577	0.813	1.000					
Burials near water sources or wetlands can harm aquatic ecosystem.	0.858	0.976	0.738	0.810	1.000				
Burials near water sources or wetlands can threaten biodiversity.	0.942	0.824	0.881	0.563	0.914	1.000			
Indiscriminate burials can lead to a decline in property values .	0.803	0.727	0.766	0.508	0.785	0.910	1.000		
Improper burials can attract insects spreading diseases.	0.650	0.808	0.806	0.638	0.638	0.745	0.956	1.000	
Burial within residential neighborhood can lead to public health risks.	0.988	0.719	0.741	0.819	0.729	0.837	0.715	0.813	1.000
Improper burials within residential neighborhood can lead to decline in neighborhood aesthetics and community well-being.	0.870	0.605	0.891	0.708	0.740	0.942	0.837	0.931	0.880

Source: Field survey by Authors, 2024

## Conclusion

The findings of this study underscore the significant environmental degradation associated with indiscriminate burial. The study established a positive correlation between indiscriminate burials and various forms of environmental degradation, including groundwater contamination, air pollution, and threats to biodiversity. The decomposition of human bodies releases harmful substances, including heavy metals and toxic organic compounds, which can percolate into the soil and contaminate groundwater sources. This poses serious health risks to communities relying on these water sources for drinking and agriculture. Moreover, the presence of burials within residential areas was found to diminish property values and negatively impact neighborhood aesthetics and community well-being. The practice also attracts disease-carrying insects, increasing the risk of epidemics. These impacts highlight the urgent need for regulatory frameworks and community sensitization to address and mitigate the adverse effects of indiscriminate burials.

## Recommendations:

### • Regulatory Frameworks and Legislation

Governments at various levels should establish and enforce stringent regulations governing burial practices. These regulations should mandate proper site selection, minimum soil cover, and the use of impermeable barriers to prevent groundwater contamination. Legislation should include penalties for non-compliance to ensure adherence to safe burial practices.

### • Development of Designated Burial Sites

Authorities should develop designated burial sites with appropriate environmental safeguards to reduce the need for residential burials. These sites should be equipped with

adequate soil cover, proper drainage systems, and barriers to prevent leachates infiltration into groundwater.

### • Education and awareness

There is a dire need to educate communities about the environmental impacts on indiscriminate burials.

### • Other Measures

Other mitigating factors include the need to engage communities in environmental conservation and burial site management; need to explore alternative death care options like resomation, promession, or alkaline hydrolysis; need to regularly maintain and monitor burial sites to prevent environmental degradation; need to ensure proper disposal of hazardous materials like embalming fluids and coffin materials; need to encourage eco-friendly burial practices such as shallow graves, natural burial sites and native vegetation and promotion of cremation as an alternative to burials, reducing land use and environmental impacts.

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