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Physicochemical Parameters and Coliform Contaminants in Kuto Stream, Abeokuta, Ogun State, Nigeria

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ABSTRACT

Access to safe freshwater is fundamental to human health and ecosystem functioning yet surface water sources in many rapidly urbanizing settings are increasingly threatened by anthropogenic activities. This study investigates the water parameters and coliform bacterial load in Kuto Stream in Abeokuta, Ogun State, Nigeria. Water samples were collected from ten stations (spaced 50 meters downstream) and analyzed using standard methods, while the association between parameters was determined using Pearson correlation. The pH values (6.5–7.1) fell within the World Health Organization (WHO) permissible range for drinking and surface water, indicating near-neutral conditions typical of tropical freshwater systems. Temperature values (29–31 °C) slightly exceeded the WHO guideline (25–29 °C), reflecting ambient tropical conditions and shallow depth, while electrical conductivity (170–260 µS/cm), total dissolved solids (110–180 ppm), and alkalinity remained within permissible limits. Salinity values (130–134 ppm) were marginally above the recommended threshold (100 ppm), likely due to local geological contributions and anthropogenic inputs. A strong positive correlation ($p<0.05$) was observed between total dissolved solids and salinity, suggesting common ionic sources. Bacteriological analysis revealed spatial variation in microbial loads, with the highest total coliform counts at station I (117.00 CFU/100 mL) while the lowest was recorded in station G (45.00±4.78 CFU/100 mL) and detection of *Escherichia coli*, *Shigella spp.*, *Proteus spp.*, *Enterobacter spp.*, and *Pseudomonas spp.*, indicating faecal pollution and potential health risks. In conclusion, the findings highlight the influence of land use and human activities on the water quality of Kuto Stream and underscore the need for regular monitoring, improved sanitation, and integrated watershed management to safeguard public health and environmental integrity.

Keywords: Kuto Stream, physicochemical parameters, bacteriological quality, water pollution

INTRODUCTION

The access to safe freshwater is fundamental to human health, ecosystem functioning, and socio-economic development, yet surface water sources in many rapidly urbanizing settings are increasingly threatened by various anthropogenic activities (Adewoyin and Olaniyan, 2024; Umoren *et al*., 2024a; 2024b; 2025a). Waterborne pathogens remain a major cause of gastrointestinal diseases globally, and their transmission is strongly associated with the contamination of water bodies by faecal matter (WHO, 2017). Because pathogenic microorganisms are often difficult to detect directly, the

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routine monitoring of bacteriological indicator organisms particularly total coliforms, faecal coliforms, and *Escherichia coli* is widely used to assess the microbiological safety of water resources (Ashbolt *et al*., 2022).

In Nigeria, the Nigerian Standard for Drinking Water Quality provides regulatory thresholds for microbiological and physicochemical parameters in drinking water (Standard Organization of Nigeria [SON], 2015). However, compliance with these standards is often poor in peri-urban areas, and several studies have reported significant levels of coliform contamination in wells, boreholes, streams, and sachet water across southwestern Nigeria (Olalekan *et al*., 2020; Taiwo *et al*., 2023). Abeokuta, the capital of Ogun State, is experiencing rapid population growth, urban expansion, and land-use changes that are exerting mounting pressures on its local freshwater systems (Ogunyemi *et al*., 2021; Umoren *et al*., 2025a; Osifeso *et al*., 2025a). Kuto Stream, which flows through densely populated neighbourhoods such as Kuto and Ijeun-Titun, receives direct inputs from domestic sewage, roadside drainage, and solid waste, making it highly vulnerable to both chemical and microbial contamination (Akinyemi *et al*., 2022; Umoren *et al*., 2024a).

Previous investigations have highlighted deteriorating physicochemical quality and the presence of trace metals in streams within the Abeokuta metropolis, suggesting anthropogenic contributions from residential, market, and small-scale industrial activities (Adepoju *et al*., 2024; Osifeso *et al*., 2025b) including direct defecation (Umoren *et al*., 2024). These factors increase the likelihood of faecal pollution and the proliferation of pathogenic organisms in the water. The detection of any faecal coliforms or *E. coli* in water intended for human consumption indicates a potential health hazard and calls for immediate remedial action (WHO, 2017). Therefore, the assessment of surface waters such as the Kuto Stream is critical as an early-warning tool to protect public health and to support evidence-based water resource management strategies.

Previous studies within Abeokuta and other parts of southwestern Nigeria have reported the presence of coliform bacteria and other pathogenic microorganisms in surface and groundwater sources, often at levels exceeding permissible limits (Olalekan *et al*., 2020; Taiwo *et al*., 2023). However, there is limited site-specific information on the current bacteriological and physicochemical status of Kuto Stream, despite its proximity to residential, market, and transport hubs. Without such evidence-based assessment, there is a continued risk of disease outbreaks and environmental degradation, undermining efforts to achieve Sustainable Development Goal 6 on clean water and sanitation (WHO, 2017). This study therefore, aim to assess the water quality and coliform contamination of Kuto Stream in Abeokuta, Ogun State, Nigeria.

MATERIALS AND METHODS

Study Area

The research was carried out in Isale Oja Kuto, a densely populated neighbourhood within the Kuto area of Abeokuta, Ogun State, southwestern Nigeria. It lies close to the bustling Kuto Market and serves as a mixed-use zone with a combination of residential and commercial land uses. The area is traversed by a small urban stream, commonly referred to as the Kuto Stream or Isale Oja Stream, which forms part of the drainage network of the Ogun River catchment. This stream segment receives runoff from nearby residential compounds, market stalls, motor parks, and roadside drainage channels, making it highly susceptible to anthropogenic contamination (Akinyemi *et al*., 2022).

Human activities exert substantial pressure on the environmental quality of the stream. Field observations and previous studies have

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reported indiscriminate disposal of solid waste, discharge of grey water and untreated domestic sewage, washing of vehicles, bathing of livestock (such as goats and rams), and even open defecation along the stream banks (Edokpayi *et al*., 2018; Akinyemi *et al*., 2022; Umoren *et al*., 2024). These practices introduce organic matter, nutrients, and pathogenic microorganisms into the stream, leading to increased microbial loads and deterioration of water quality. Elevated levels of salinity, chloride, and coliform bacteria have been reported in similar urban streams in the Kuto–Ijeun-Titun axis, confirming the influence of local human activities on water quality (Olatunji *et al*., 2019; Umoren *et al*., 2025b).

Despite its ecological and drainage importance, the Isale Oja section of Kuto Stream remains under considerable environmental stress. The combined effects of high population density, commercial pressure, inadequate drainage facilities, and poor waste management have made the stream a hotspot for contamination and flood risk within Abeokuta's urban landscape.

Table 1: Description of sampled stations and coordinates.

Stations	Coordinates
Station A	7.1442269,3.3534816
Station B	7.1450254,3.3547467
Station C	7.1438163,3.3536674
Station D	7.1443287,3.3545532
Station E	7.1447149,3.353577
Station F	7.1442269,3.3534816
Station G	7.1443287,3.3545532
Station H	7.1445076,3.3537778
Station I	7.1438163,3.3536674
Station J	7.14436248,3.3535443

Sampling Procedure

Ten (10) water samples were collected using a 1L plastic bottle pre-treated with 5% nitric acid (HNO_3) overnight each from ten (10) stations, 50 meters apart in the stream. During sampling, all necessary precautions were taken into consideration to avoid contamination. The temperature and pH of the samples were determined *in situ*. labelled appropriately and transported in an ice pack to the Chemical Science Research Unit of Pure Sciences, Abeokuta, Ogun State, Nigeria for further analysis.

Quality Control and Assurance

All chemicals used were of Analytical grade purity and reagent blanks were made following the specifications to evaluate the reagents' purity. To ensure the highest level of instrument accuracy, the water quality meter and laboratory equipment were checked and calibrated according to the manufacturer's specifications and instructions (Umoren *et al.,* 2024b; Osifeso *et al*., 2025a). The membrane paper used was sterilized and complete aseptic method was adopted during the microbial work.

Physicochemical Analysis

The physicochemical quality of the water samples was carried out using standard methods as described by Umoren *et al. (*2024) and Osifeso *et al*. (2025c). The total dissolved solids (TDS), salinity and electrical conductivity (EC) were determined using the handheld digital water quality meter (Model: EZ-9909SP) while total acidic and total alkalinity was determined using Titrimetric Methods.

Microbial Examination

Membrane filtration

The membrane filtration technique with modification was adopted in the research (Foster and Pinedo, 2016). Fifty (50) ml of the water samples was passed through a fine membrane (nitro cellulose membrane filter: 0.45 µm) using suction filtration. Then the membrane was subjected to incubation on total coliform count (TCC) on Mac Conkey agar plates.

Culture and Total Coliform Count (TCC)

Mac Conkey agar was used as the primary culture media. The agar was prepared according to the manufacturers guidelines. The membrane was inoculated into a previously poured sterilized prepared media.

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This was done in duplicate; plates were incubated at 35ºC for 24 hours. Total coliform count (TCC) was visually counted using a handheld magnifying lens (>7). The distinct colonies were sub-cultured by streak method to obtain a pure culture; then plates were subjected to further differential plates and screening. The total coliform density was calculated as CFU per 100 ml.

$$Coliform\ Density = \frac{Number\ of\ Coliform\ colonies\ on\ membrane \times 100}{Volume\ of\ sample}$$

Data Analysis

Data was subjected to statistical package for social sciences (SPPS) for descriptive statistics and MS Excel for data visualization. Tukey *Post Hoc* Test was employed to determine the significance between the stations. $p< 0.05$ while Pearson correlation was employed to reveal the association between parameters.

RESULTS AND DISCUSSION

Physicochemical Quality of Kuto Stream

The physicochemical parameters of the water sample from Kuto Stream are presented in Table 2. The pH levels ranged from 6.52 to 7.09, with the highest mean pH recorded at Station A (7.06) and the lowest at Station I (6.55). The pH levels were statistically significant ($p<0.05$) and fell within the WHO threshold limit of 6.5 to 8.5. The temperature ranged from 29.10°C to 30.30°C, with the highest mean temperature at Station A (30.10°C) and the lowest at Station B (29.10°C). The mean temperature levels were also significant ($p<0.05$) and all recorded temperatures exceeded the WHO threshold limit of 25 to 29°C.

Electrical conductivity (EC) varied from 253.00 to 267.00 µS/cm. The highest mean EC was observed at Station D (266.33 µS/cm), closely followed by Station I (266.33 µS/cm), while the lowest value was recorded at Station F (259.67 µS/cm). The mean EC levels were not statistically significant ($p<0.05$) but were still above the WHO threshold limit of 1000 µS/cm. Total dissolved solids (TDS) ranged from 129.00 to 134.00 ppm. The highest mean TDS was recorded at Station F (133.33 ppm), followed closely by Stations D and H (133.00 ppm), while the lowest was found at Station J (130.33 ppm). The mean TDS levels were significant ($p<0.05$) and all values were within the WHO threshold limit of 500 ppm.

Salinity ranged from 130.00 to 134.00 ppm. The highest mean salinity was noted at Stations F and I (133.33 ppm), whereas the lowest was at Station A (130.67 ppm). The mean salinity levels were significant ($p<0.05$) and exceeded the WHO threshold limit of 100 ppm. Total alkalinity ranged from 21.00 to 29.0 mg/L. The highest mean total alkalinity was at Station A (27.33 mg/L), while the lowest was measured in both Stations C and D (22.33 mg/L). The mean total alkalinity levels were not statistically significant ($p<0.05$) and were within the WHO threshold limit of 200 mg/L. Total acidity ranged from 4.00 to 10.00 mg/L. The highest mean total acidity was found at Station E (8.67 mg/L), while the lowest was recorded at Stations A, H, and J (6.00 mg/L). The mean total acidity levels were not statistically significant ($p<0.05$).

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Table 2: Physiochemical parameters of Kuto Stream

Parameters	Stations	Mean	Std. Deviation	Minimum	Maximum
pH	Station A	7.06^{e}	0.03	7.04	7.09
	Station B	6.62^{bc}	0.03	6.60	6.65
	Station C	6.58^{ab}	0.02	6.57	6.60
	Station D	6.71^{d}	0.02	6.70	6.73
	Station E	6.65^{bc}	0.03	6.62	6.68
	Station F	6.66^{c}	0.03	6.63	6.69
	Station G	6.75^{d}	0.04	6.72	6.79
	Station H	6.74^{d}	0.04	6.70	6.78
	Station I	6.55^{a}	0.03	6.52	6.58
	Station J	6.62^{bc}	0.04	6.58	6.66
	Threshold limit	**6.5-8.5**			
Temperature (ºC)	Station A	30.10^{d}	0.20	29.90	30.30
	Station B	29.10^{a}	0.00	29.10	29.10
	Station C	29.53^{abc}	0.06	29.50	29.60
	Station D	29.50^{abc}	0.00	29.50	29.50
	Station E	29.40^{ab}	0.00	29.40	29.40
	Station F	29.40^{ab}	0.53	28.80	29.80
	Station G	29.60^{bc}	0.00	29.60	29.60
	Station H	29.90^{cd}	0.00	29.90	29.90
	Station I	29.30^{ab}	0.00	29.30	29.30
	Station J	29.40^{ab}	0.00	29.40	29.40
	Threshold limit	25-29^{o}C			
Electrical Conductivity (µS/cm)	Station A	261.67^{a}	1.15	261.00	263.00
	Station B	263.67^{a}	1.15	263.00	265.00
	Station C	262.33^{a}	2.08	260.00	264.00
	Station D	266.33^{a}	1.15	265.00	267.00
	Station E	264.33^{a}	1.15	263.00	265.00
	Station F	259.67^{a}	6.11	253.00	265.00
	Station G	262.33^{a}	7.23	254.00	267.00
	Station H	264.33^{a}	2.08	262.00	266.00
	Station I	266.00^{a}	1.00	265.00	267.00
	Station J	263.67^{a}	2.31	261.00	265.00
	Threshold limit	**1000**			
Total Dissolved Solid (ppm)	Station A	130.67^{a}	0.58	130.00	131.00
	Station B	131.33^{ab}	0.58	131.00	132.00
	Station C	130.33^{a}	1.15	129.00	131.00
	Station D	133.00^{c}	0.00	133.00	133.00
	Station E	132.33	0.58	132.00	133.00
	Station F	133.33^{c}	0.58	133.00	134.00
	Station G	132.67^{bc}	0.58	132.00	133.00
	Station H	132.33^{bc}	0.58	132.00	133.00
	Station I	133.00^{c}	0.00	133.00	133.00
	Station J	132.00^{bc}	0.00	132.00	132.00
	Threshold limit	**500**			
Salinity (ppm)	Station A	130.67^{a}	0.58	130.00	131.00

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	Station B	131.33^{ab}	0.58	131.00	132.00
	Station C	131.00^{a}	0.00	131.00	131.00
	Station D	133.00^{cd}	0.00	133.00	133.00
	Station E	132.33^{cd}	0.58	132.00	133.00
	Station F	133.33^{d}	0.58	133.00	134.00
	Station G	132.67^{cd}	0.58	132.00	133.00
	Station H	133.00^{cd}	0.00	133.00	133.00
	Station I	133.33^{d}	0.58	133.00	134.00
	Station J	132.00^{bc}	0.00	132.00	132.00
	Threshold limit	**100**			
Total Alkalinity (mg/L)	Station A	27.33^{a}	1.53	26.00	29.00
	Station B	24.33^{a}	3.06	21.00	27.00
	Station C	22.33^{a}	2.08	20.00	24.00
	Station D	23.33^{a}	2.08	21.00	25.00
	Station E	24.33^{a}	1.53	23.00	26.00
	Station F	23.33^{a}	0.58	23.00	24.00
	Station G	25.00^{a}	2.00	23.00	27.00
	Station H	24.67^{a}	2.08	23.00	27.00
	Station I	27.00^{a}	2.00	25.00	29.00
	Station J	27.00^{a}	2.00	25.00	29.00
	Threshold limit	**200**			
Total Acidity (mg/L)	Station A	6.00a	1.00	5.00	7.00
	Station B	7.67^{a}	2.08	6.00	10.00
	Station C	6.67^{a}	1.53	5.00	8.00
	Station D	7.67^{a}	1.53	6.00	9.00
	Station E	8.67^{a}	0.58	8.00	9.00
	Station F	6.67^{a}	0.58	6.00	7.00
	Station G	7.67^{a}	0.58	7.00	8.00
	Station H	6.00^{a}	1.73	4.00	7.00
	Station I	6.67^{a}	1.53	5.00	8.00
	Station J	6.00^{a}	1.00	5.00	7.00
	Threshold limit	-			

Mean values with different superscript along the column are significantly different at $p<0.05$

Relationship between parameters

The relationship between the sample parameters is presented in Table 3. The results indicate a significantly strong positive relationship between pH and temperature ($r=0.735$, $p<0.01$) and a strong positive relationship between TDS and salinity ($r=0.907$, $p<0.01$).

Coliform load of Kuto stream

The coliform load of the sample from kuto stream was presented in table 4. The highest mean coliform load was recoded in sample I (177.00±5.67 Cfu/100L) followed by sample C (132.00±4.55 Cfu/100L) while the lowest was recorded in sample H (28.00±3.62 Cfu/100L). Five (5) coliform bacteria were isolated from the stream namely *Enterobacter sp., E. coli, Pseudomonas sp., Shigella spp. and Proteus sp*.

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Table 3: Correction matrix between sample parameters

	pH	Temp.	EC	TDS	Salinity	T. Alkalinity	T. Acidity
pH	1	**0.735****	-0.189	-0.255	-0.345	0.277	-0.132
Temperature		1	0.084	-0.186	-0.149	0.204	-0.347
EC			1	0.175	0.147	0.178	0.010
TDS				1	**0.907****	0.073	0.092
Salinity					1	0.015	0.031
T. Alkalinity						1	-0.411*
T. Acidity							1

Correlation is significant at the 0.05 level /. Correlation is significant at the 0.01 level.*

Table 4: Coliform load (CFU/100 mL) for across the stations.

Stations codes	Mean (n=3)	Suspected Isolate
Station A	47.00±6.78	*Pseudomonas sp.,*
Station B	54.00±5.78	*Pseudomonas sp.*
Station C	132.00±4.55	*Enterobacter sp.,*
Station D	86.00±6.67	*Enterobacter sp.,*
Station E	86.00±9.14	*E. coli*
Station F	87.00±7.51	*Pseudomonas sp.*
Station G	45.00±4.78	*Proteus sp.*
Station H	28.00±3.62	*Enterobacter sp.,*
Station I	177.00±5.67	*Shigella spp. and Pseudomonas sp.*
Station J	87.00±4.24	*Proteus sp*

DISCUSSION

The physicochemical parameters measured in Kuto Stream provide important insights into its water quality status and potential suitability for domestic and environmental use. The pH values fall within the World Health Organization (WHO) permissible range of for surface and drinking water (WHO, 2017). The slightly acidic to near-neutral nature of the stream water suggests minimal influence of industrial or strongly alkaline discharges and is consistent with the natural buffering capacity of freshwater systems (Edokpayi *et al*., 2018). Similar pH values have been reported in urban streams across southwestern Nigeria, including the Ogunpa River in Ibadan (6.3–7.5) and the Osun River in Osogbo (6.4–7.2), indicating that Kuto Stream exhibits typical pH conditions for tropical surface waters (Olatunji *et al*., 2019; Adebola *et al*., 2020).

Temperature values were all slightly above the WHO guideline of 25–29 °C for surface waters. Elevated water temperatures can enhance microbial growth and reduce dissolved oxygen solubility, potentially accelerating organic matter decomposition (Chapman, 1996). The observed temperature range aligns with values reported for the Ogun River (29–31 °C) and the Ala River in Akure (28–30 °C), reflecting the influence of ambient tropical climatic conditions and shallow stream depth (Adesuyi *et al*., 2022). Although these temperatures are not directly harmful, they can indirectly influence other water quality parameters and ecological dynamics. Electrical conductivity (EC) values were relatively low and well below the WHO permissible limit of 1000 µS/cm (WHO, 2017). EC is a measure of the ionic content of water, and low values indicate low mineralization and minimal industrial or agricultural intrusion (Adewuyi *et al*., 2021). These findings are comparable to EC values reported in the Eleyele Reservoir (220–280 µS/cm) and the Opa Reservoir (200–300 µS/cm) in southwestern Nigeria (Olujimi *et al*., 2017). The absence of statistically

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significant variation suggests uniform ionic distribution across sampling stations.

Similarly, total dissolved solids (TDS) were within the WHO recommended threshold of 500 ppm (WHO, 2017). TDS concentrations reflect the sum of inorganic salts and small amounts of organic matter dissolved in water (EPA, 2012). The relatively low TDS values observed indicate limited anthropogenic input and are consistent with those reported in the Osun River (120–150 ppm) and the Erinle River (130–160 ppm) (Olatunji *et al*., 2019; Adebola *et al*., 2020). Salinity values (130.00–134.00 ppm), although slightly higher than the WHO guideline of 100 ppm for freshwater systems, are still relatively low and likely reflect the natural mineral content of the local geology (WHO, 2017). Slightly elevated salinity has been noted in urban streams exposed to road runoff and domestic wastewater in Abeokuta and Lagos (Akinyemi *et al*., 2022; Taiwo *et al*., 2023). Prolonged increases in salinity, however, can affect aquatic biodiversity and the potability of water sources.

Total alkalinity remained well within the WHO limit of 200 mg/L. Alkalinity measures the buffering capacity of water against acidification, and the values recorded suggest that the stream possesses moderate buffering ability and is not at immediate risk of acidification. Comparable values have been reported in the Ogunpa and Osun rivers (20–35 mg/L) (Olatunji *et al*., 2019). Total acidity has no statistically significant variations among stations. Acidity values within this range are typical of unpolluted tropical surface waters and further corroborate the near-neutral pH levels observed (Edokpayi *et al*., 2018). The increases in temperature were associated with corresponding increases in pH across the sampling stations. This pattern suggests that thermal conditions may influence the acid–base balance of the stream water. Elevated temperatures can enhance photosynthetic activity by aquatic plants and algae, leading to increased uptake of carbon dioxide and a consequent rise in pH levels due to reduced carbonic acid concentrations (Chapman, 1996). Similar findings have been reported in other tropical freshwater systems, where seasonal temperature fluctuations were shown to significantly influence pH dynamics (Olatunji *et al*., 2019; Adesuyi *et al*., 2022). The warm tropical conditions of Abeokuta likely promote these biogeochemical processes, resulting in the observed positive association between temperature and pH in Kuto Stream.

The strong positive relationship observed between total dissolved solids (TDS) and salinity is expected because both parameters measure the dissolved ionic content of water, with salinity representing the concentration of dissolved salts and TDS reflecting the overall concentration of inorganic and small organic matter present (EPA, 2012). As dissolved salts accumulate, both salinity and TDS values rise proportionally, explaining the high degree of correlation. Comparable results have been reported in studies of urban rivers in Nigeria and other tropical environments, where strong positive correlations between salinity and TDS ($r > 0.85$) have been documented (Adewuyi *et al*., 2021; Akinyemi *et al*., 2022). This relationship highlights the role of dissolved ions derived from natural geological weathering and anthropogenic sources such as domestic wastewater and surface runoff in regulating the ionic composition of surface waters.

The bacteriological analysis of Kuto Stream revealed marked spatial variations in coliform load, with the highest mean concentration observed at Station I. The elevated coliform densities in Stations I and C likely reflect localized anthropogenic inputs, such as domestic wastewater discharge, open defecation, and runoff from nearby markets or residential areas. In contrast, the lower coliform load at Station H may indicate comparatively reduced human activity or more effective natural self-purification at that section of the stream. The

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spatial heterogeneity in microbial contamination underscores the influence of land use and human proximity on surface water quality (Edokpayi *et al*., 2018; Akinyemi *et al*., 2022).

The presence of *E. coli* is particularly significant because it is widely recognized as a reliable indicator of recent faecal contamination and the possible presence of pathogenic enteric microorganisms (WHO, 2017). Similarly, *Shigella* spp. are known agents of bacillary dysentery, while *Proteus* spp. and *Enterobacter* spp. are opportunistic pathogens often associated with urinary tract and wound infections (Todar, 2020). The isolation of *Pseudomonas* spp. further suggests environmental contamination, as this genus is commonly found in polluted waters and is noted for its resistance to multiple antibiotics (Igbinosa *et al*., 2017). The occurrence of these organisms collectively indicates that Kuto Stream is under faecal pollution pressure and poses potential public health risks, especially to individuals who use the water for domestic or recreational purposes. These findings are consistent with previous studies on urban streams in southwestern Nigeria, where high coliform counts and diverse enteric bacteria have been reported, often linked to poor sanitation and inadequate waste management (Olatunji *et al*., 2019; Adewuyi *et al*., 2021). The presence of pathogenic and opportunistic bacteria in surface water bodies is a major public health concern, as it can serve as a transmission route for waterborne diseases such as gastroenteritis, typhoid, and dysentery.

CONCLUSION

This study assessed the water quality of Kuto Stream in Abeokuta, Ogun State, Nigeria. Physicochemical parameters largely complied with WHO standards, indicating low mineralization and limited industrial impact. pH values were slightly acidic to near neutral, typical of tropical surface waters. However, temperature and salinity were marginally elevated, likely due to climatic conditions and local anthropogenic inputs such as domestic runoff. In contrast, bacteriological analysis revealed high coliform contamination, including *E. coli* and other pathogenic bacteria, reflecting faecal pollution from human activities. Although physicochemical quality remains acceptable, microbial contamination poses a significant public health risk if left unmanaged.

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