International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 12 No. 2, 2026
https://theaspd.com/index.php

Spatial Assessment of Physicochemical and Microbiological Characteristics of River Water Quality in the Southern Landfill of India

Saritha D [1] Akhila Rupesh [2] JothiBasu[3] Jency Lal [4]

[1]PhD Scholar, European International University –France, Paris.
[2]Research Supervisor, LIPS Research & DLCARD- India
[3]Research Supervisor, LIPS Research & DLCARD- India
[4]CEO Mother's Pride & Mother's Millets -India

Abstract

This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH, electrical conductivity, total dissolved solids, alkalinity, hardness, chloride, sulphate, nitrate, ammonia, turbidity, iron concentration, and microbiological indicators were compared with BIS drinking water standards. The investigation identified significant spatial variations in water quality. Most samples exhibited acceptable pH and TDS values, whereas turbidity exceeded permissible limits in several locations. Marthandam and Munchirai samples indicated evidence of contamination requiring attention. The findings emphasize the importance of continuous monitoring and integrated watershed management strategies.
This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH, electrical conductivity, total dissolved solids, alkalinity, hardness, chloride, sulphate, nitrate, ammonia, turbidity, iron concentration, and microbiological indicators were compared with BIS drinking water standards. The investigation identified significant spatial variations in water quality. Most samples exhibited acceptable pH and TDS values, whereas turbidity exceeded permissible limits in several locations. Marthandam and Munchirai samples indicated evidence of contamination requiring attention. The findings emphasize the importance of continuous monitoring and integrated watershed management strategies.
This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH, electrical conductivity, total dissolved solids, alkalinity, hardness, chloride, sulphate, nitrate, ammonia, turbidity, iron concentration, and microbiological indicators were compared with BIS drinking water standards. The investigation identified significant spatial variations in water quality. Most samples exhibited acceptable pH and TDS values, whereas turbidity exceeded permissible limits in several locations. Marthandam and Munchirai samples indicated evidence of contamination requiring attention. The findings emphasize the importance of continuous monitoring and integrated watershed management strategies.
This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH, electrical conductivity, total dissolved solids, alkalinity, hardness, chloride, sulphate, nitrate, ammonia, turbidity, iron concentration, and microbiological indicators were compared with BIS drinking water standards. The investigation identified significant spatial variations in water quality. Most samples exhibited acceptable pH and TDS values, whereas turbidity exceeded permissible limits in several locations. Marthandam and Munchirai samples indicated evidence of contamination requiring attention. The findings emphasize the importance of continuous monitoring and integrated watershed management strategies.
This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH, electrical conductivity, total dissolved solids, alkalinity, hardness, chloride, sulphate, nitrate, ammonia, turbidity, iron concentration, and microbiological indicators were compared with BIS drinking water standards. The investigation identified significant spatial variations in water quality. Most samples exhibited acceptable pH and TDS values, whereas turbidity exceeded permissible limits in several locations. Marthandam and Munchirai samples indicated evidence of contamination requiring attention. The findings emphasize the importance of continuous monitoring and integrated watershed management strategies.

This study presents a comprehensive assessment of physicochemical and microbiological characteristics of river water samples collected from nine locations in Kanyakumari District, Tamil Nadu, India. Water quality was evaluated using standard IS 3025 and APHA procedures. Parameters including pH,

Keywords: *Water quality; River monitoring; Kanyakumari District; Physicochemical analysis; Microbiological assessment; Springer manuscript.*

1. INTRODUCTION

Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence

river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation purposes. Rapid urbanization, agricultural runoff, and anthropogenic activities influence river quality. Water quality monitoring provides scientific evidence to evaluate contamination levels and guide management interventions. Previous studies have demonstrated that physicochemical parameters and microbial indicators are reliable tools for evaluating river health. The present study was undertaken to generate baseline information regarding the status of major rivers in Kanyakumari district and assess their suitability with respect to drinking water standards. Freshwater resources are vital for ecosystem sustainability, agricultural productivity, and public health. River systems in Kanyakumari district serve as major sources for domestic and irrigation.

2. LITERATURE REVIEW

Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable

management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination, and turbidity associated with anthropogenic activities. Application of BIS and WHO standards enables objective comparison of results. Research also highlights the significance of regular monitoring programs for sustainable management of freshwater ecosystems. Recent investigations emphasize incorporating microplastic assessments into conventional water quality studies to better understand emerging contaminants. Numerous researchers have investigated river water quality using integrated physicochemical and microbiological approaches. Studies conducted across India have reported increasing concerns related to nutrient enrichment, microbial contamination,

3. MATERIALS AND METHODS

Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , Themanoor , and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients

including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards. Nine river water samples were collected from Chittar Dam 2, Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Samples were collected in sterile containers and transported to the laboratory. Analytical procedures followed IS 3025 and APHA guidelines. pH and electrical conductivity were measured instrumentally, whereas alkalinity and hardness were estimated using titrimetric methods. Nutrients including nitrate and ammonia were determined using spectrophotometric techniques. Turbidity measurements employed nephelometric methods. Microbiological quality was assessed through coliform testing. Data were interpreted against BIS drinking water standards.

4. RESULTS

Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed

microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated ammonia levels, while Munchirai showed microbiological contamination. These findings reveal spatial heterogeneity influenced by local environmental factors. Results indicated that pH values remained within acceptable limits across all locations. TDS values were below permissible limits, indicating relatively low mineralization. Elevated turbidity was recorded in Rock-cut temple, Thirparappu, Vazhaithottam, Parai , Aruvikkarai , Marthandam , ST Mangad, and Munchirai. Marthandam demonstrated increased iron and nitrate concentrations. Themanoor exhibited elevated

5. DISCUSSION

The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing

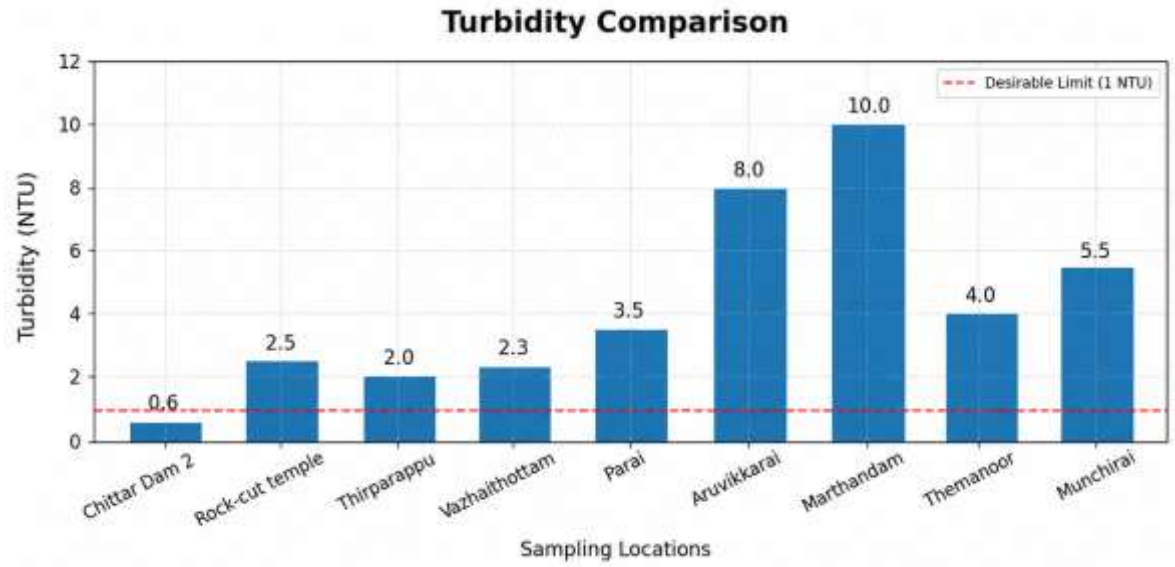
turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring are essential to maintain water quality. The observed trends indicate that most rivers maintain acceptable chemical quality; however, increasing turbidity and microbial contamination highlight the need for intervention. Elevated turbidity may result from soil erosion, runoff, and anthropogenic disturbances. High ammonia concentrations in Themanoor may indicate organic pollution sources. Detection of microbial contamination in Munchirai raises concerns regarding sewage intrusion and public health risks. The findings align with previous reports emphasizing the vulnerability of surface waters in rapidly developing regions. Integrated watershed management, pollution control, and periodic monitoring .

6. Comparative Data

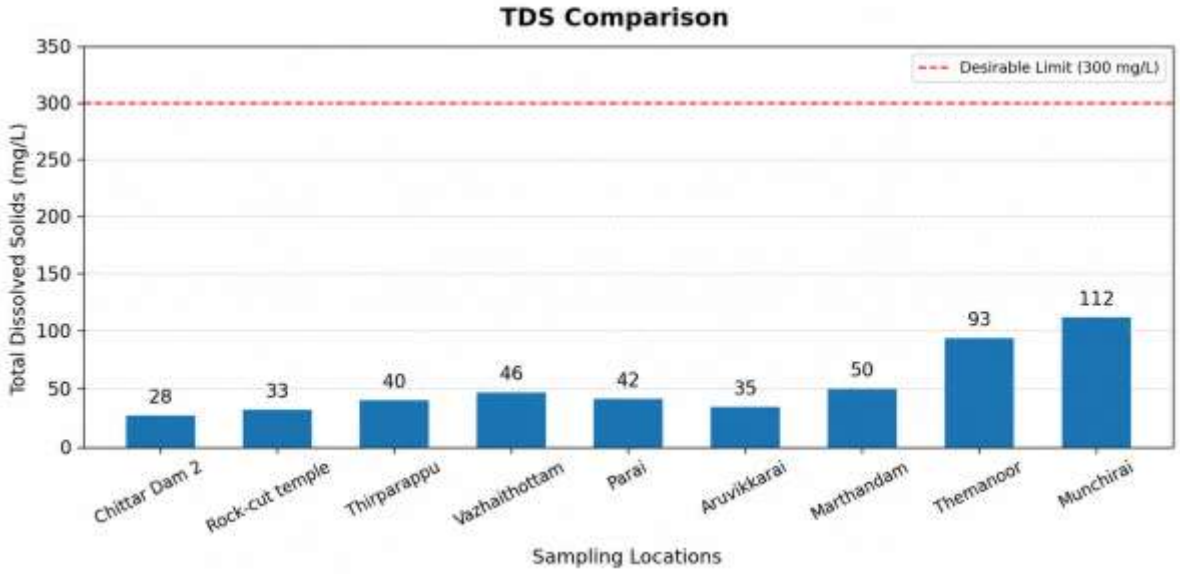
Site	pH	TDS	Turbidity
Chittar Dam 2	6.5	28	0.6
Rock-cut temple	6.5	33	2.5
Thirparappu	6.6	40	2.0
Vazhaithottam	6.8	46	2.3
Parai	6.8	42	3.5
Aruvikkarai	6.6	35	8.0
Marthandam	7.0	50	10.0
ST Mangad	6.8	93	4.0
Munchirai	6.8	112	5.5

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 12 No. 2, 2026
https://theaspd.com/index.php

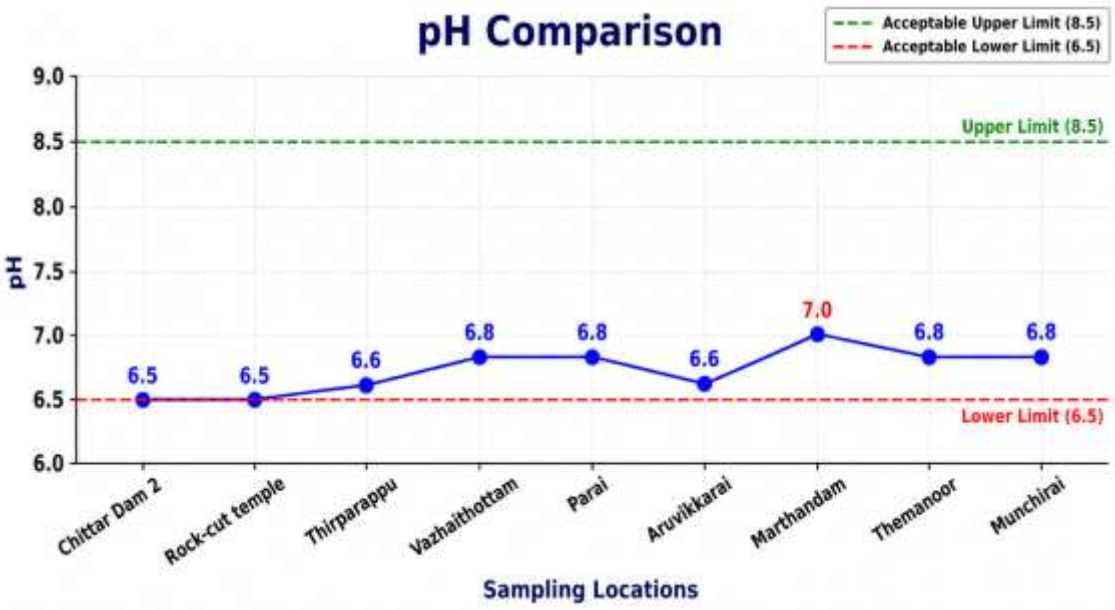
Turbidity Bar Chart



TDS Comparative Chart



pH Trend Graph



7. SITE-WISE DISCUSSION

Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination,

while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends. Aruvikkarai and Marthandam demonstrated significant turbidity, with Marthandam showing elevated chemical parameters. Themanoor showed ammonia contamination, while Munchirai presented microbial concerns requiring urgent treatment. Chittar Dam 2 displayed the best quality characteristics. Rock-cut temple and Thirparappu exhibited moderate turbidity concerns. Vazhaithottam and Parai indicated increasing contamination trends

8. Inference

The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels.

Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized

environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures and the need for targeted intervention. The majority of samples exhibited acceptable pH and TDS levels. However, turbidity exceeded desirable limits in most sites, indicating suspended particles and possible contamination. Marthandam showed elevated iron and nitrate levels. Themanoor exhibited high ammonia concentrations, whereas Munchirai demonstrated microbiological contamination and disagreeable odor. These observations suggest localized environmental pressures

6. CONCLUSION

The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiatives are recommended to safeguard freshwater resources. The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiatives are recommended to safeguard freshwater resources. The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiatives are recommended to safeguard freshwater resources. The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiatives are recommended to safeguard freshwater resources. The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiatives are recommended to safeguard freshwater resources. The study provides valuable baseline information regarding river water quality in Kanyakumari district. Although most parameters complied with drinking water standards, turbidity and microbial contamination warrant attention. Targeted interventions, continuous surveillance, and public awareness initiative

REFERENCES

1. APHA (2017). Standard Methods for the Examination of Water and Wastewater.
2. BIS 10500 (2012). Drinking Water Specifications.
3. WHO (2022). Guidelines for Drinking-water Quality.
4. IS 3025 Methods of Sampling and Test for Water.
5. Recent peer-reviewed articles on river water quality assessment. 1. APHA (2017). Standard Methods for the Examination of Water and Wastewater.
6. Akhila Rupesh & Dr.J V Muruga lal Jeyan, "Consistent Evaluation Of Largest River Of Kerala To Restrict Water Limitations At Ten Locations", Indian Journal of Scientific Research IJSR, Special Volume, December 2017, PP 132-136, ISSN 2250-0138.
7. Jyothi, N. T., Nair, A., & Darney, P. E. (2023). Computational and investigational proportional flow study on Cd nozzle. International Journal for Multidisciplinary Research (IJFMR), 5(6). https://doi.org/10.36948/ijfmr.2023.v05i06.11081
8. Jeyan, J. V. M. L., Jyothi, N. T., & Kaushik, R. (2022). Systematic review and survey on dominant influence of Vedas and ignorance transpired in space science and aviation. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(7), b490–b493. http://www.jetir.org/papers/JETIR2207158.pdf

9. Muthu Venkatesh, R., Rajarajan, G., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2022). Systematic survey of wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6), h830– h840. http://www.jetir.org/papers/JETIR2206795.pdf
10. Parveen, A., Jyothi, N. T., & Jeyan, J. V. M. L. (2022). Study of implementation of value stream mapping and lean tools to achieve lean. International Journal of Creative Research Thoughts (IJCRT), 10(10), e329–e334. http://www.ijcrt.org/papers/IJCRT2210502.pdf
11. Jyothi, N. T., Hussainar, A., Rana, S., & J. V. Muruga Lal Jeyan. (2024). An intercontinental study of employee and employer human factor issues put up in aerospace and aviation industry. International Journal for Multidisciplinary Research (IJFMR), 6(1). https://doi.org/10.36948/ijfmr.2024.v06i01.12441
12. Parveen, A., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2022). International study on application of value stream mapping to identify the necessity of lean system implementation. International Journal of Scientific Research in Engineering and Management (IJSREM), 6(9).
13. J. V. Muruga Lal Jeyan, Jyothi, N. T., & Kaushik, R. (2022). Systematic review and survey on dominant influence of Vedas and ignorance transpired in space science and aviation. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(7), b490–b493. http://www.jetir.org/papers/JETIR2207158.pdf
14. J. V. M. L. Jeyan, Jyothi, N. T., Raja, B., & Rajarajan, G. (2022). Theory strategy of subsonic wind tunnel for low velocity. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6), j572–j580. http://www.jetir.org/papers/JETIR2206973.pdf
15. J. V. M. L. Jeyan, Jyothi, N. T., Reshmitha Shree, Bhawadharanee, S., & Rajarajan, G. (2022). Theoretical study of hypersonic wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6), j512–j518. http://www.jetir.org/papers/JETIR2206967.pdf
16. J. V. M. L. Jeyan, Jyothi, N. T., Thampuratty, V. D., Nithin, B., & Rajarajan, C. D. (2022). Concept design and development of supersonic wind tunnel. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6), j209–j217. http://www.jetir.org/papers/JETIR2206925.pdf
17. Muthu Venkatesh, R., Rajarajan, G., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2022). Systematic survey of wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6), h830– h840. http://www.jetir.org/papers/JETIR2206795.pdf
18. Parveen, A., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2021). Investigation of lean developments and the study of lean techniques through event studies. International Journal for Science and Advance Research in Technology, 8(4).
19. Gopala Krishnan, P., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2021). Novel evaluation of aircraft data structure optimization techniques and opportunities. International Journal for Science and Advance Research in Technology, 8(4).
20. Upadhyay, S., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2021). Preliminary study on brain computer interface. International Journal of Innovative Research in Technology (IJIRT), 8(3), 720.
21. Sruthi S. Kumar, Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2022). Computational turbine blade analysis with thermal barrier coating. International Journal of Engineering Research and Applications (IJERA), 12(4, Series I), 1–8. https://doi.org/10.9790/9622-1204010108
22. Jyothi, N. T., Ganesan, H., & Jeyan, J. V. (2024, April). Methodical assessment and truth flow analysis of wind tunnels. AIP Conference Proceedings, 3037(1), 020016. https://doi.org/10.1063/5.0196120
23. J. M. Lal Jeyan, Jyothi, N. T., Raja, B., & Rajarajan, G. (2022). Theory strategy of subsonic wind tunnel for low velocity. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
24. Venkatesh, M., Rajarajan, G., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2022). Systematic survey of wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
25. J. M. Lal Jeyan, Jyothi, N. T., Thampuratty, V. D., Nithin, B., & Rajarajan, C. D. (2022). Development of supersonic wind tunnel. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
26. Parveen, A., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2021). Investigation of lean developments and the study of lean techniques through event studies. International Journal for Science and Advance Research in Technology, 8(4).
27. Gopala Krishnan, P., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2021). Novel evaluation of aircraft data structure optimization techniques and opportunities. International Journal for Science and Advance Research in Technology, 8(4).
28. Parveen, A., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2022). International study on application of value stream mapping to identify the necessity of lean system implementation. International Journal of Scientific Research in Engineering and Management (IJSREM), 6.
29. J. V. Muruga Lal Jeyan, Jyothi, N. T., & Rajarajan, G. (2022). Theoretical study of hypersonic wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
30. J. V. Muruga Lal Jeyan, Jyothi, N. T., & Rajarajan, G. (2022). Theory strategy of subsonic wind tunnel for low velocity. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
31. Venkatesh, M., Rajarajan, G., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2022). Systematic survey of wind tunnel test facility in India. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
32. J. V. Muruga Lal Jeyan, Jyothi, N. T., Thampuratty, V. D., Nithin, B., & Rajarajan, C. D. (2022). Development of supersonic wind tunnel. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).
33. J. V. Muruga Lal Jeyan, Jyothi, N. T., & Kaushik, R. (2022). Systematic review and survey on dominant influence of Vedas and ignorance transpired in space science and aviation. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(7).
34. J. V. Muruga Lal Jeyan, Jyothi, N. T., Thampuratty, V. D., Nithin, B., & Rajarajan, C. D. (2022). Concept design and development of supersonic wind tunnel. International Journal of Emerging Technologies and Innovative Research (JETIR), 9(6).

35. Jyothi, N. T., Ganesan, H., & J. V. Muruga Lal Jeyan. (2024). Methodical assessment and truth flow analysis of wind tunnels. AIP Conference Proceedings, 3037(1), 020016. https://doi.org/10.1063/5.0196120
36. J. V. Muruga Lal Jeyan, & Senthil Kumar, M. (2014). Performance evaluation of yaw meter with the aid of computational fluid dynamic. International Review of Mechanical Engineering (IREME).
37. Lal Jeyan, J. V. M., & Senthil Kumar, M. (2014). Performance evaluation for multi-hole probe with the aid of artificial neural network. Journal of Theoretical and Applied Information Technology, 65(3).
38. Kaur, T., Thomas, T., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2025). An intercontinental analysis of workforce dynamics in the aviation: A human factors approach. International Journal of Aviation Management (IJAM), 3(2), 1–17. https://doi.org/10.34218/IJAM_03_02_00
39. Asokan, K., J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2025). A systematic analysis using computational and numerical methods to examine the dynamic performance of common transport aircraft. International Journal of All Research Education and Scientific Methods (IJARESM), 13(7).
40. Asokan, K., Jyothi, N. T., & J. V. Muruga Lal Jeyan. (2025). A review and methodology study on computational analysis needs of a transport aircraft design. International Journal of Mechanical Engineering and Technology (IJMET), 16(4), 79–92.
41. Chinthiya, J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2025). A study on problem formulation of outside window imaginary system in aircraft. International Journal of Advanced Research in Engineering and Technology (IJARET), 16(1), 552– 568. https://doi.org/10.34218/IJARET_16_01_039
42. Chinthiya, J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2025). Aircraft cockpit flight data graphical view opportunities: An experimental approach. International Research Journal of Modernization in Engineering Technology and Science, 7(3).
43. Karthikeyan, A., Darney, P. E., & Husain, Y. (2025). A study on organizational development in the hospital sector through the adoption of excellent HRM practices. Journal of Management (JOM), 12(1), 1–21. https://doi.org/10.34218/JOM_12_01_001
44. Chinthiya, J. V. Muruga Lal Jeyan, & Jyothi, N. T. (2025). An overview on outside window imaginary system needs in aircraft. International Journal of Advanced Research in Engineering and Technology (IJARET), 16(1), 10–19. https://doi.org/10.34218/IJARET_16_01_002
45. Asokan K, Jyothi NT, & JV Muruga Lal Jeyan. (2025). Computational Outcome Validation & Evaluation of a Transport Aircraft Analysis. Acceleron Aerospace Journal, 5(4), 1447–1461. https://doi.org/10.61359/11.2106-2555
46. The Mediating Role of Knowledge-Centered Culture in the Relationship Between High-Performance Work Systems and Intrapreneurial Behavior among Medical Staff", JETNR - JOURNAL OF EMERGING TRENDS AND NOVEL RESEARCH (www.JETNR.org), ISSN:2984-9276, Vol.4, Issue 3, page no.a524-a532, March-2026, Available :https://rjpn.org/JETNR/papers/JETNR2603082.pdf
47. Developing and Evaluating Generative AI Agents for Personalized Feedback in Higher Education:" International Journal of All Research Education and Scientific Methods (IJARESM),ISSN : 2455-6211, Volume 14 Issue 1 , January 2026, Page No : 348 to 355 Available : file:///C:/Users/Hiiii%20Dell/Downloads/Dr.L.Vinila3.pdf
48. "Design and Experimental Evaluation of an Integrated Security Framework for Real-Time and Safety-Critical Aviation Environments", JAAFR - JOURNAL OF ADVANCE AND FUTURE RESEARCH (www.JAAFR.org), ISSN:2984-889X, Vol.4, Issue 2, page no.923-931, February-2026, Available :https://rjwave.org/JAAFR/papers/JAAFR2602108.pdf
49. Developing and Evaluating Generative AI Agents for Personalized Feedback in Higher Education:" International Journal of All Research Education and Scientific Methods (IJARESM),ISSN : 2455-6211, Volume 14 Issue 1 , January 2026, Page No : 348 to 355 Available : file:///C:/Users/Hiiii%20Dell/Downloads/Dr.L.Vinila3.pdf
50. "Design and Experimental Evaluation of an Integrated Security Framework for Real-Time and Safety-Critical Aviation Environments", JAAFR - JOURNAL OF ADVANCE AND FUTURE RESEARCH (www.JAAFR.org), ISSN:2984-889X, Vol.4, Issue 2, page no.923-931, February-2026, Available :https://rjwave.org/JAAFR/papers/JAAFR2602108.pdf
51. Tejinder Kaur, Mukka Tharuneswar Reddy, Mohamed Hussein Abdirahman, Abhinav Jaiswal,Reshma.S, Jency Lal. (2026). Pre- and Post-Repair Analysis of Aircraft Structural Components UsingAluminium–Acrylic Composite Laminates. International Journal of Aerospace Engineering (IJASE), 4(1), 1-26
52. Tejinder Kaur, Tania Thomas, Jyothi NT, JV Muruga Lal Jeyan. (2025). An Intercontinental Analysis of Workforce Dynamics in the Aviation a Human Factors Approach. International Journal of Aviation Management (IJAM), 3(2), 1-17. doi: https://doi.org/10.34218/IJAM_03_02_00