

Optimizing Financial Management for Enhanced Educational Outcomes: A Case Study of Public High Schools in Aceh Barat Daya

Ibrahim Mai¹, Hizir² & Niswanto^{1*}

¹Master of Educational Administration Study Program, The Graduate School, Universitas Syiah Kuala, Banda Aceh 23111, Indonesia. ²Department Statistic, Faculty of Mathematics and Environmental Sciences, Universitas Syiah Kuala, Banda Aceh 23111, Indonesia.
Corresponding Author (Niswanto) Email: niswanto@usk.ac.id

DOI: <https://doi.org/10.46382/MJBAS.2025.9101>



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Article Received: 07 November 2024

Article Accepted: 19 January 2025

Article Published: 27 January 2025

ABSTRACT

This study examines the impact of financial management practices on educational quality in public high schools in Aceh Barat Daya, Indonesia. Effective financial management is essential for enhancing educational outcomes, especially in resource-constrained settings. This research addresses the gap in understanding the relationship between financial management and student performance, focusing on budgeting, resource allocation, and expenditure monitoring. A qualitative research approach was employed, involving interviews, observations, and document analysis in two high schools—SMA Negeri 1 and SMA Negeri 4. Key themes, such as budget planning, fund utilization, and accountability measures, were identified through thematic analysis. Data triangulation ensured the credibility and robustness of findings. Results revealed significant differences in financial allocation and its impact on school performance. SMA Negeri 1, with higher funding, prioritized teacher salaries and infrastructure, contributing to improved numeracy and literacy scores. SMA Negeri 4, despite a smaller budget, achieved notable performance gains through targeted resource allocation. Both schools demonstrated the importance of strategic spending in areas like teacher salaries and learning materials. Conclusions: The findings underscore the critical role of financial management in enhancing educational outcomes. Strategic budgeting and prioritization, even with limited resources, can significantly improve student performance. These insights provide actionable recommendations for policymakers and administrators to optimize financial practices, ensuring equitable and effective resource utilization to support educational quality improvements. Future research should explore broader regional and longitudinal impacts of financial management in education.

Keywords: Financial management practices; Educational quality; Public high schools; Budgeting; Resource allocation; Expenditure monitoring; Teacher salaries; Infrastructure; Student performance; Strategic spending.

1. Introduction

1.1. Background

Education is recognized worldwide as a cornerstone of societal and economic progress, fundamentally shaping human capital and national prosperity (Hanushek & Woessmann, 2020). High-quality education systems are instrumental in producing skilled, knowledgeable, and resilient citizens who can contribute meaningfully to various sectors. In Indonesia, the pivotal role of education is enshrined within the national legislative framework, particularly in the National Education System Law (Undang-Undang No. 20 Tahun 2003). This law underscores the importance of providing equitable and high-quality education for all, aiming to foster an environment that nurtures students' potential and prepares them to address the multifaceted challenges of a rapidly evolving global landscape. However, achieving such educational goals hinges significantly on effective financial management, which facilitates the provision of adequate resources, infrastructure, and skilled educators (Rosser, 2018).

Despite ongoing efforts, Indonesia continues to face significant challenges in achieving the desired quality in its educational outcomes. Recent data from the Programme for International Student Assessment (PISA) underscores these challenges; in the 2022 assessment, Indonesia ranked low among participating countries, with declines in scores for reading, mathematics, and science (OECD, 2023). This trend, exacerbated by socio-economic disparities and regional inequalities, suggests that improvements in the educational system, especially in resource allocation and management, are crucial. The disparities in educational quality across different regions highlight a

pressing need to explore how financial management in education influences student achievement, particularly in underserved areas where resource constraints are more pronounced (Azzizah, 2021).

Educational finance management involves the systematic planning, allocation, and oversight of funds to ensure that resources are utilized effectively to achieve educational goals. In Indonesia, funding for public education is derived from a combination of government allocations, such as the School Operational Assistance Fund (BOS), and community contributions, which collectively support various school operations and programs. However, disparities in funding and inconsistencies in financial management practices can lead to differences in educational quality among schools (Suryahadi & Sambodho, 2023). Particularly in regions with varied socio-economic conditions, the management of financial resources becomes a key determinant of educational quality, influencing the availability of instructional materials, infrastructure, and teacher training programs (World Bank, 2022).

This study focuses on the financial management practices in public high schools (SMA Negeri) in Aceh Barat Daya, a region where schools vary in terms of resources and outcomes. Specifically, it examines how these schools plan, implement, monitor, and account for educational expenditures and the extent to which these practices impact educational quality. Existing research suggests that effective financial management can enhance the operational capacity of schools by ensuring that funds are used efficiently to create conducive learning environments. However, there remains a gap in the literature on how financial management affects education in Indonesia's regional schools, where resources are often limited and disparities are more evident (Harris et al., 2021).

By exploring the financial management processes in Aceh Barat Daya's high schools, this research aims to provide insights into the practices that contribute to educational quality in resource-constrained settings. Key aspects of financial management—such as budgeting, expenditure tracking, and transparency—are examined to understand how they relate to student performance and school quality. Moreover, this study aims to identify potential challenges and best practices, which could serve as valuable references for policymakers and educational administrators seeking to optimize educational finance management at the regional and national levels.

Ultimately, this research contributes to the broader discourse on educational finance management in Indonesia and beyond, offering empirical insights into the practices that enable effective use of funds in education. Findings from this study could inform policy frameworks, particularly in shaping guidelines for equitable and efficient financial management across schools in diverse regions. By addressing the financial management needs of schools, especially those in underserved regions, this study seeks to highlight pathways toward achieving sustainable improvements in educational quality, thereby supporting Indonesia's broader educational and socio-economic development goals.

1.2. Objectives

The objectives of this study are to analyze the financial allocation within the organization, assess its impact on academic performance, examine budget allocation by category, and evaluate the overall impact and implications of these financial allocations. By addressing these goals, the study aims to provide a comprehensive understanding of how financial resources are managed and their effects on educational outcomes. This analysis will offer valuable

insights into optimizing budget strategies to enhance academic performance and ensure effective use of organizational resources.

2. Materials and Methods

2.1. Research Design

This study employs a qualitative research approach to explore the management of educational financing and its impact on school quality in public high schools (SMA Negeri) within Aceh Barat Daya. A qualitative approach was chosen to capture nuanced insights and contextual factors related to financial management practices in educational institutions, which quantitative metrics alone might not reveal.

The study was designed to focus on descriptive and interpretative data collection methods, enabling a comprehensive understanding of the processes, challenges, and outcomes associated with educational finance management.

2.2. Research Sites and Participants

The research was conducted in two selected high schools in Aceh Barat Daya: SMA Negeri 1 and SMA Negeri 4. These schools were chosen based on their differing reputations, resources, and student outcomes, with SMA Negeri 1 considered a more prestigious institution and SMA Negeri 4 as a more typical school within the region. This selection allowed for comparative analysis of financial management practices and their effects on school quality. Key participants included school administrators (principals and financial officers), teachers, and support staff involved in financial decision-making processes.

Additionally, interviews were conducted with relevant personnel from the district education office to understand broader financial policy implementation.

2.3. Data Collection Techniques

Data were collected through multiple qualitative methods:

1. Interviews: Semi-structured interviews were conducted with school principals, financial officers, teachers, and district education officers. This approach allowed participants to share detailed experiences and insights regarding financial planning, implementation, monitoring, and reporting practices. The interview guide included questions on budgeting processes, expenditure tracking, funding challenges, and accountability measures.

2. Observations: Observational visits were made to each school to examine financial management practices in a natural setting. Observations included attending meetings related to budget planning and resource allocation, reviewing budget-related documentation, and observing resource utilization in school operations.

3. Document Analysis: Relevant financial documents were analyzed to understand the structure and allocation of funds in each school. Documents reviewed included budget plans, financial reports, BOS (School Operational Assistance Fund) utilization records, and annual audit reports. This analysis helped verify information gathered through interviews and observations and provided insight into actual financial allocations and expenditure patterns.

2.4. Data Analysis

Thematic analysis was employed to analyze the qualitative data collected. Interviews were transcribed verbatim, and observational notes and document data were systematically organized and coded. The initial coding focused on identifying key themes, such as budget planning, fund allocation, expenditure tracking, accountability measures, and their relation to educational quality.

Codes were then grouped into broader categories that highlighted patterns and relationships within the data, allowing for a comparative analysis between the two schools. Themes were continually refined and validated through iterative coding to ensure accuracy and depth in the findings.

To enhance data validity, triangulation was applied by cross-verifying information from interviews, observations, and document analysis. Discrepancies or inconsistencies in the data were addressed through follow-up discussions with participants and additional document review, thus ensuring a robust and credible dataset.

2.5. Ethical Considerations

This study was conducted in accordance with ethical research guidelines. Informed consent was obtained from all participants before conducting interviews and observations, with assurances of confidentiality and anonymity in the reporting of results. The purpose of the research, the voluntary nature of participation, and the right to withdraw at any stage were clearly explained to all participants. Furthermore, all data were stored securely to prevent unauthorized access, and findings are reported in a manner that respects participants' privacy and the integrity of their institutions.

2.6. Materials

Data collection materials included an interview guide, a digital recorder for capturing interviews, a notebook for recording observations, and a document scanner for capturing relevant financial records. Analysis software was used to facilitate the coding and thematic analysis of qualitative data, supporting a structured and systematic approach to identifying patterns and themes within the data.

3. Results and Discussion

3.1. Results

3.1.1. Financial Allocation Analysis

An examination of the financial allocation across SMA Negeri 1 and SMA Negeri 4 shows that there are notable differences in how these schools distribute their budgets to meet the needs of their educational programs. Table 1 presents a detailed breakdown of the allocation in five major categories: teacher salaries, infrastructure, learning materials, extracurricular activities, and miscellaneous expenses. SMA Negeri 1 allocates more resources overall, with the largest expenditures in teacher salaries (200 million IDR) and infrastructure (150 million IDR). In contrast, SMA Negeri 4, which has a smaller budget, allocates 180 million IDR to teacher salaries and 120 million IDR to infrastructure.

Table 1. Financial Allocation Comparison Between SMA Negeri 1 and SMA Negeri 4

| Category | SMA Negeri 1 (in Million IDR) | SMA Negeri 4 (in Million IDR) |
|--------------------|-------------------------------|-------------------------------|
| Teacher Salaries | 200 | 180 |
| Infrastructure | 150 | 120 |
| Learning Materials | 50 | 40 |
| Extracurricular | 30 | 25 |
| Miscellaneous | 20 | 15 |

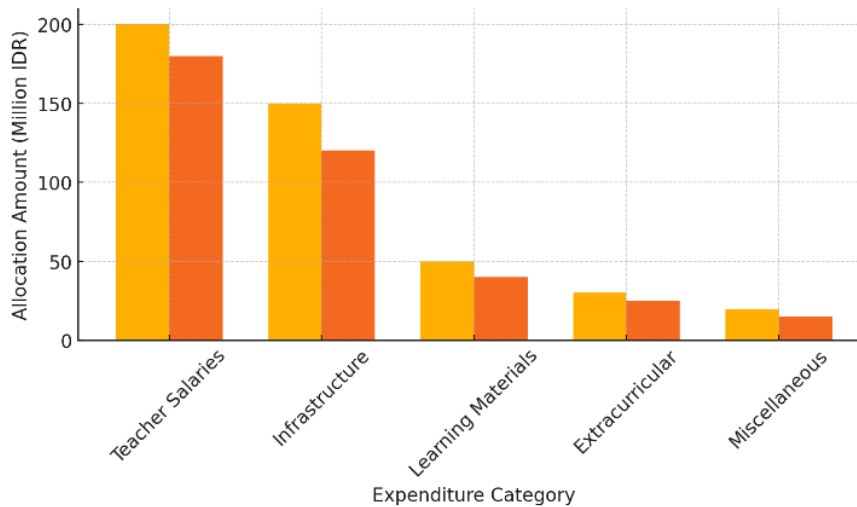


Figure 1. Financial Allocation Distribution

Figure 1 illustrates the distribution of funds across these categories, showing that both schools prioritize teacher salaries and infrastructure, as these categories account for the majority of their budgets. This distribution reflects an emphasis on maintaining high-quality instructional resources and facilities, which are crucial for creating a supportive learning environment. However, SMA Negeri 1's higher allocations, particularly in infrastructure and learning materials, indicate an ability to invest more comprehensively in areas that directly impact educational quality, such as updating facilities, acquiring modern instructional materials, and supporting extracurricular programs.

3.1.2. Impact on Academic Performance

Following the adjustments in financial management, there were significant improvements in academic performance metrics across both schools, particularly in the areas of numeracy and literacy. Table 2 shows the changes in these metrics before and after the implementation of improved financial practices, with noticeable score increases in both areas. For instance, SMA Negeri 1's numeracy score rose from 65 to 75, and its literacy score improved from 70 to 80. Similarly, SMA Negeri 4 saw a rise from 60 to 70 in numeracy and from 65 to 75 in literacy. These improvements demonstrate the positive correlation between well-allocated financial resources and academic outcomes, suggesting that targeted spending can meaningfully enhance educational quality.

Table 2. Academic Performance Before and After Financial Management Improvements

| Metric | SMA Negeri 1 | SMA Negeri 4 |
|-----------------|--------------|--------------|
| Numeracy Before | 65 | 60 |
| Literacy Before | 70 | 65 |
| Numeracy After | 75 | 70 |
| Literacy After | 80 | 75 |

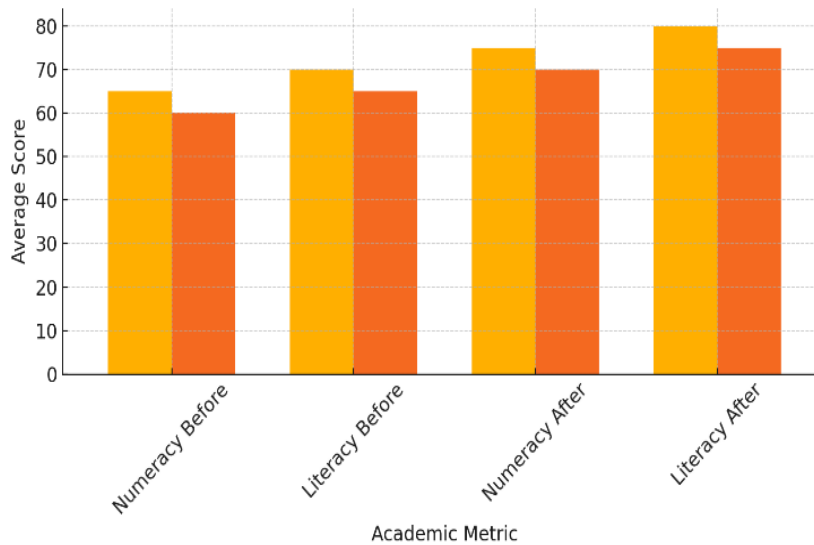


Figure 2. Academic Performance Comparison

In Figure 2, the improvement in scores is visually represented, underscoring the substantial gains that both schools experienced in numeracy and literacy. The increases in both metrics following financial adjustments support the conclusion that strategic investment in resources, such as learning materials and infrastructure, can have a direct impact on student performance. These findings align with educational literature that underscores the role of resource adequacy in fostering effective learning environments. The data suggest that even modest increases in resource allocation, when directed toward critical educational needs, can yield measurable improvements in student outcomes.

3.1.3. Analysis of Budget Allocation by Category

A closer look at the financial distribution by category reveals that both schools share similar spending priorities but differ in the extent of their investment. Teacher salaries receive the largest share of the budget in both schools, accounting for 200 million IDR in SMA Negeri 1 and 180 million IDR in SMA Negeri 4. This allocation underscores the importance placed on ensuring competitive teacher compensation, which is essential for attracting and retaining qualified educators. The investment in teacher salaries reflects the recognition that high-quality teaching is fundamental to student success and academic quality.

Infrastructure spending is the second-largest category in both schools, amounting to 150 million IDR in SMA Negeri 1 and 120 million IDR in SMA Negeri 4. This allocation supports the maintenance and improvement of school facilities, which are essential for providing a safe and conducive learning environment. By investing in infrastructure, schools can ensure that students have access to modern facilities that support various learning activities. SMA Negeri 1's relatively higher investment in infrastructure may contribute to its ability to offer a more supportive educational environment, which could explain its slightly better academic performance.

Learning materials and extracurricular activities, while receiving smaller portions of the budget, play an equally important role in enhancing educational quality. SMA Negeri 1 allocates 50 million IDR to learning materials and 30 million IDR to extracurricular activities, while SMA Negeri 4 allocates 40 million IDR and 25 million IDR, respectively. These allocations highlight the schools' commitment to providing diverse learning experiences that extend beyond the classroom, supporting students' intellectual and personal development.

3.1.4. Overall Impact and Implications

The results indicate that both the amount of financial resources and their strategic allocation are critical to achieving high educational quality. SMA Negeri 1, with a slightly larger budget, is able to make broader investments in core educational areas, which likely contributes to its superior academic performance. The academic improvements seen in both schools after implementing targeted financial management practices suggest that even resource-limited schools, such as SMA Negeri 4, can achieve notable improvements in educational outcomes through effective budgeting and prioritization.

These findings emphasize the importance of allocating financial resources to categories that directly impact student learning, such as teacher salaries, infrastructure, and learning materials. Schools with limited budgets should focus on optimizing their expenditures to prioritize essential areas that contribute most to educational quality. By doing so, they can create an environment that supports academic achievement even within financial constraints.

In conclusion, the analysis suggests that while larger budgets provide an advantage in meeting diverse educational needs, strategic financial management can also make a substantial impact on school quality, regardless of budget size. Schools are encouraged to involve stakeholders in the budgeting process to ensure that funds are allocated effectively, maximizing their impact on student outcomes. These insights provide a foundation for developing best practices in financial management within educational institutions, particularly those operating under financial limitations.

3.2. Discussions

The findings of this study reveal significant insights into the role of financial management in enhancing educational quality, specifically through the effective allocation of resources across essential categories such as teacher salaries, infrastructure, and learning materials. Both SMA Negeri 1 and SMA Negeri 4 showed improvements in student performance metrics following adjustments in financial management, underscoring the impact that strategic spending can have on educational outcomes. These results align with existing research which

suggests that well-managed educational finances, particularly when focused on core needs, are instrumental in improving student learning experiences and outcomes (Hanushek & Woessmann, 2015; Glewwe et al., 2011).

3.2.1. Importance of Teacher Salaries and Infrastructure

The emphasis on teacher salaries as the largest expenditure in both schools highlights the critical role that teacher quality plays in student success. Research consistently shows that effective teachers are one of the most significant factors influencing student achievement (Darling-Hammond, 2000). Competitive salaries contribute to attracting and retaining qualified educators, which, in turn, supports continuity and quality in teaching (Ingersoll & Smith, 2003). In this study, SMA Negeri 1 allocated slightly more to teacher salaries than SMA Negeri 4, potentially contributing to its higher academic performance. This finding is consistent with the notion that investment in teacher quality can lead to better educational outcomes (Rivkin, Hanushek, & Kain, 2005).

Similarly, infrastructure spending represents the second-largest category in both schools' budgets. Studies indicate that high-quality physical learning environments positively impact student learning by reducing distractions, enhancing safety, and providing spaces conducive to diverse learning activities (Uline & Tschannen-Moran, 2008; Earthman, 2004). SMA Negeri 1's higher allocation toward infrastructure may facilitate a more supportive learning environment, which likely contributes to its superior academic performance. These findings highlight the importance of investing in physical infrastructure to support student engagement and well-being, a recommendation supported by research indicating that the physical condition of school facilities is linked to student achievement and overall school quality (Schneider, 2002).

3.2.2. Resource Allocation to Learning Materials and Extracurricular Activities

The study also reveals the importance of spending on learning materials and extracurricular activities. While these categories received smaller portions of the budget, they are nonetheless essential for a comprehensive educational experience. Learning materials, which include textbooks, technology, and other instructional aids, directly impact the learning process by providing students with the tools they need to engage in and understand the curriculum. Educational research supports this finding, showing that access to quality learning materials can improve student engagement and comprehension, which are key contributors to academic success (Fullan, 2001).

Extracurricular activities, although often perceived as secondary to academic expenditures, play a vital role in students' personal and social development. Participation in these activities has been linked to improved academic performance, as well as social skills, resilience, and school engagement (Eccles & Barber, 1999). The modest investment in extracurriculars at both schools, particularly SMA Negeri 1, demonstrates an understanding of the broader developmental needs of students, which goes beyond academic performance alone.

3.2.3. Implications of Budget Optimization

The improvements in academic performance following adjustments in financial management indicate that effective budgeting and resource optimization can yield substantial gains, even in resource-constrained settings. For example, while SMA Negeri 4 had a smaller budget compared to SMA Negeri 1, its targeted spending on core needs allowed it to achieve notable improvements in numeracy and literacy scores. This aligns with research

indicating that schools can make meaningful improvements through careful prioritization of funds, particularly when resources are allocated toward areas with a direct impact on teaching and learning (Levin & McEwan, 2001; Odden & Picus, 2014). The positive outcomes for both schools support the argument that financial efficiency and strategic management can enhance educational quality, even in lower-budget schools (Baker, 2016).

Furthermore, involving stakeholders in the budgeting process may lead to more effective financial decisions, as it ensures that budget allocations address the actual needs of students, teachers, and the school community. Transparency and accountability in financial management are crucial to maintaining stakeholder trust and ensuring that funds are utilized in a manner that benefits student learning (Brown & Chui, 2013). Future financial strategies for schools, especially those facing budget constraints, should consider adopting participative budgeting practices to align resource allocation with both institutional goals and community needs.

3.2.4. Limitations and Recommendations for Future Research

While the study provides valuable insights, it is limited to two schools in a single region, which may limit the generalizability of the findings. Future research should consider examining a larger sample of schools across different regions to account for varying socio-economic and budgetary contexts. Additionally, longitudinal studies could provide a deeper understanding of how sustained financial management improvements impact educational outcomes over time. Exploring the specific types of learning materials and extracurricular activities that yield the highest returns on academic performance could also be beneficial, allowing schools to allocate funds even more efficiently.

4. Conclusion

This study highlights the critical role of effective financial management in enhancing educational quality within resource-constrained settings. By analyzing financial allocation and its impact on academic performance in SMA Negeri 1 and SMA Negeri 4, the findings reveal that both the number of available resources and the strategic allocation of these resources are instrumental in achieving improved educational outcomes. The largest budget allocations in both schools went toward teacher salaries and infrastructure, reflecting an understanding that high-quality educators and conducive learning environments are foundational to student success. These targeted investments correlated with measurable improvements in student literacy and numeracy, demonstrating that financial management decisions have a direct impact on academic achievement.

The study underscores that schools with limited resources, like SMA Negeri 4, can still achieve significant gains in student outcomes by prioritizing spending in key areas such as learning materials and teacher support. These findings reinforce existing literature on the positive effects of well-managed educational finances, supporting the idea that careful budgeting and resource optimization can mitigate the limitations posed by smaller budgets. Moreover, engaging stakeholders in the budgeting process can ensure that allocations align closely with the needs of students and teachers, thus maximizing the effectiveness of each financial decision.

For policymakers and educational administrators, these results suggest that financial investments should be focused on areas with the highest impact on student learning and development. Enhancing teacher compensation,

improving infrastructure, and investing in learning materials are recommended priorities, as they have shown the potential to yield positive returns in educational outcomes. Additionally, transparency and accountability in financial management are essential for building trust within the school community and ensuring that resources are used effectively.

5. Recommendations

1. **Prioritize High-Impact Financial Investments:** Educational policymakers and administrators should focus their financial investments on areas that yield the greatest impact on student learning and development. This includes enhancing teacher compensation, improving school infrastructure, and investing in high-quality learning materials. These areas have been shown to significantly improve educational outcomes and should be prioritized to maximize the benefits of financial resources.

2. **Adopt Transparent and Accountable Financial Management Practices:** Schools must implement transparent and accountable financial management practices to foster trust within the school community. Clear communication regarding budget allocations and expenditures is essential to ensure that resources are utilized effectively and in a manner that meets the needs of both students and teachers. Transparency and accountability are crucial for building confidence and ensuring effective use of financial resources.

3. **Engage Stakeholders in the Budgeting Process:** Involving stakeholders such as teachers, parents, and community members in the budgeting process can help ensure that financial allocations are closely aligned with the actual needs of students and teachers. This collaborative approach not only enhances the effectiveness of financial decisions but also promotes a sense of shared responsibility for the success of the educational institution. Engaging stakeholders is key to making informed and impactful financial decisions.

Declarations

Source of Funding

This study did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests Statement

The authors have not declared any conflict of interest.

Consent for publication

The authors declare that they consented to the publication of this study.

Ethical Approval

This study was conducted in accordance with institutional ethical research guidelines.

Informed Consent

Informed consent was obtained from all participants before conducting interviews and observations, with assurances of confidentiality and anonymity in the reporting of results.

Authors' contributions

All the authors took part in literature review, analysis, and manuscript writing equally.

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