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Educational Management Information System: Its Relevance to Recording Keeping and Processing in Secondary Schools

Olusumbo Adisa 

Department of Educational Management, University of Ibadan, Nigeria

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ABSTRACT

To adequately respond to frequent requests for information, school management needs an appropriate system and protocol to validate and promptly analyze collected data to support decision-making. The Educational Management Information System (EMIS) is a database designed to ensure that educational data are accurately analyzed, to inform decisions and suggest solutions. EMIS encapsulates ICT applications that facilitate data collection, assembly, storage, and analysis, thereby easing school management decisions. This study, therefore, investigated the relevance of EMIS to staff and student record keeping and processing in secondary schools. Using a descriptive research design, data were collected via questionnaire from 100 students across five secondary schools in Badagry, Lagos State, and analyzed using Chi-Square tests. The findings revealed no significant relationship between an administrator's gender or department and their managerial skills in record keeping and processing. Similarly, the physical location for saving records (computer lab vs. cabinet) showed no significant effect on processing efficiency. Key challenges identified include but not limited to inadequate resources, poor infrastructure, and negative attitudes among stakeholders. The study concludes that while EMIS has the potential to improve management decisions in planning, staffing, and coordination, its effective implementation in the studied context is hindered by the aforementioned challenges. Practical recommendations include the urgent provision of EMIS infrastructure, targeted training for record officers, and initiatives to improve stakeholder attitudes towards systematic data management.

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Corresponding Author:

Olusumbo Adisa

Department of Educational Management, University of Ibadan

Box 4078, University of Ibadan Post, Ibadan 200001, Oyo, Nigeria

Email: belovedxum@gmail.com

1. INTRODUCTION

Globally, an Educational Management Information System (EMIS) is designed as a database to ensure that educational data are accurately processed and judiciously used for school management decision-making. It incorporates various ICT applications that aid the collection, assembly, storage, retrieval, and analysis of data. The Educational Management Information System has lots of ICT applications that aid the collection, assembly, storage, retrieval of information, and analysis of data for decision making (Adhikari et al., 2024; Iwogbe et al., 2025; Yang & Zhang, 2022). However, in Nigeria, as a peculiar nation, EMIS is playing a minimal role in aiding educational decisions, both at the Federal, State, and even at Local Government Educational Districts. Although the planning of educational programs usually begins with the Educational

Management Information System, along the way, the planners deviate from it; they mostly use it because it plays a significant role in strategic planning at the state level.

It is obvious that information usually serves as the basis of decisions for management in planning and evaluating in educational settings. In processing, EMIS incorporates different stakeholders in all sectors for effectiveness and efficiency to access its methods of teaching, challenges, needs, functions, and evaluate its performance. An ideal system for information analysis will not only collect, assemble, store, and process, but also work hand-in-hand to help with decision-making and evaluation in school management. The effectiveness and efficiency are considered in accordance with UNESCO (2015); there is an algorithm for solving problems in order to suggest an ideal solution. This has called for the usage of IT in school management to increase efficiency and effectiveness. This aids the growth of the Management Information System (MIS), whose main aim is to develop the school management; when educational data is collected and stored, there is a need to analyze it effectively. At the integration stage, the MIS is highly valued.

Obviously, keeping a record has to do with monitoring and putting down activities for historical purposes, which could cut across finance, personal information, or keeping documents in a file, and so on. In time past, keeping records referred to the management of records that are no longer needed but need to be kept, that is, they are mainly “semi-current” records that are stored in cabinets in the office. Presently, the usage is more of the entire life cycle of a record from the creation point until disposal. These school records are official books, documents, and files containing crucial and essential information of events and actions that are preserved or kept in the office for usage and information retrieval when needed.

Record management in secondary school, as it is in any organization, is more complex as the process involves all personnel within the school, yet much of the work of record keeping is handled by the head of school along with other administrative works; keeping of records is mostly done manually, and the process of retrieval is not easy. To empirically investigate the factors influencing record-keeping practices within the framework of an Educational Management Information System (EMIS), the following null hypotheses were tested:

H₀₁: Gender has no significant implication on managerial skills for record keeping and processing.

H₀₂: The department that the data administrator belongs to has no significant effect on the record keeping and processing.

H₀₃: Saving of information in the computer laboratory or cabinet has no significant effect on the processing of student records.

2. LITERATURE REVIEW

Effective management of student and staff records is fundamental to the administration of secondary schools. In the digital age, this task is increasingly supported by Education Management Information Systems (EMIS), which are designed to systematize data collection, storage, processing, and dissemination to inform decision-making (UNESCO, 2003). While the theoretical benefits of EMIS for planning and policy at national and global levels are well-documented (UNESCO, 2014; DepEd, 2016), significant challenges persist in its practical implementation, particularly at the local institutional level. This literature review, therefore, examines the concept and objectives of EMIS, explores its intersection with Student Information Systems (SIS), and critically analyses the documented challenges of implementation. A specific focus is placed on identifying gaps in the literature concerning the contextual socio-technical barriers to EMIS adoption in local settings, such as those in Nigeria's Badagry Region of Lagos State, which forms the core investigative gap for this study.

2.1 Concept of EMIS

An Education Management Information System (EMIS) is a structured assembly of information services dedicated to supporting educational leadership (Asio et al., 2022; Rahmatullah & Mubarak, 2025). Its core function involves systematically gathering, storing, processing, and ultimately disseminating data to inform strategic planning and administrative decisions. The system is built on a framework of integrated elements, including inputs, operational processes, outputs, and feedback mechanisms, all working in concert to achieve defined educational objectives. Modern EMIS solutions often combine principles of systems theory with computer technology to manage vast quantities of data from the education sector, making it easily accessible for analysis and reporting (Ojeka et al., 2025). By providing managers with reliable and up-to-date information, an EMIS becomes an indispensable tool for enhancing decision-making, project implementation, and overall management efficacy. Therefore, competency in operating or overseeing such systems, regardless of their technological sophistication, is a fundamental requirement for today's educational professionals (Villanueva, 2003).

According to Hider et al (2018) and Jallow & Sanner (2023), the landscaping of EMIS is an important achievement. When a program starts with EMIS, very little basic knowledge of the application and a cumbersome central main system for data collation are needed. UNESCO sees EMIS as the basis of planning,

managing, and evaluating an educational system; during this process, EMIS is mandated to communicate all stakeholders on its state of the sector, its efficiency and effectiveness, methods, operations, challenges, and needs. An ideal IT should not only collate, store, and process data but also help in analysis for educational managers for policy formulation, management, and evaluation.

The objectives of data were chosen based on strategies and policy decisions; likewise, some nations' educational data are agreed upon by the school managers' surveys. Unfortunately, many are not improving on the survey done. EMIS is the Management Information System (MIS) setup for managing information on the educational system. The repository for the collection of data, procedures, analysis, and results of educational data includes students, schools, staff, and teachers (Carrizo et al., 2003). Educational System Information System is usually used to create performance indicators on the educational system and to manage the distribution and allocation of education resources and services to appropriate quarters (UNESCO, 2003).

Despite significant investment in Education Management Information Systems (EMIS) over decades, there is still little consensus on best practices or the factors that determine a system's efficacy. The World Bank alone has funded more than 40 projects with an EMIS component in some years back (infoDev, 2005; Haiyan & Herstein, 2003). Consequently, donors and policymakers are increasingly questioning the return on these investments and whether the systems are adaptable to evolving information needs. Much of the available performance data is informal and derived from project reports, which frequently cite common issues such as prolonged setup times, a lack of internal expertise to use the data effectively, and challenges in maintaining the systems over the long term.

2.2 Objectives of EMIS

Below are some of the objectives as stated by UNESCO 2003:

- i. to help the development of data analysis, storage for reliable and timely data for the educational manager.
- ii. to help in coordination and improve efforts in the collection, processing, storage, and communication of data for educational managers
- iii. to improve and promote relevant information for various organizations and individuals.
- iv. It streamlines flows of information for school managers by avoiding duplication and filling information gaps.
- v. It generates information that can formulate dialogue for the development of the educational system.

A comprehensive framework for EMIS development outlines a cyclical process spanning from the definition of national educational goals and data requirements to the collection, processing, dissemination, and final evaluation of educational data (Ross & UNESCO, 2005).

2.3 Student information system (SIS) and EMIS

Student Information System (SIS) is a dedicated educational software that is designed to manage students' information only. It is designed to allow data input on assessments, schedules, attendance, and other student-related data that the school manager needs to know about.

Connal (2005) asserted that the formal recognition of data administrator departments is crucial for establishing the organizational context in which research groups function. The study found that departments employing data administrators reported that higher-level principles of practice were universally applicable across research disciplines and institutions. These principles, which guide the effective management of scientific laboratories and work groups, are designed to foster clear communication between current and future research participants through the maintenance of stored records.

According to Valery (2020), a few of the services rendered that help the EMIS are as follows:

1. Reporting of student information and its maintenance.
2. Attending to questions from intending students
3. Admission process of new students
4. Online scheduling of a new student and enrolment.
5. Aids the student's financial record
6. Creation of class and teacher schedules
7. Recording of the academic performance of the student, including grades and progression
8. Attendance maintenance

While the server-based model has defined most Student Information Systems (SIS), a significant shift towards web-based platforms has been underway since the late 1990s. This trend is now accelerating as schools and universities progressively replace or modernize their legacy systems, moving away from centralized servers accessed by client software to more flexible, online solutions. This transition, however, introduces critical concerns regarding the security and privacy of sensitive student data in the digital age (Langsdale, 2014).

2.4 Contextual challenges in EMIS implementation

While the architectural framework of EMIS is standardized, its implementation is highly context-dependent. Global reports and studies from similar developing regions highlight recurrent barriers that resonate with the Nigerian context. These include chronic inadequate funding and infrastructural deficits (e.g., lack of reliable electricity, hardware, and internet connectivity), which form a primary technical barrier (Haiyan & Herstein, 2003; infoDev, 2005). Furthermore, human capacity and attitudinal factors pose significant socio-technical challenges. This encompasses a lack of technical expertise among administrators, resistance to change from staff accustomed to manual systems, and poor data discipline among stakeholders (De Silva, 2015). In the specific context of Nigerian secondary schools, challenges such as poor maintenance culture, insufficient training, and the manual overload on school heads complicate the integration of a digital EMIS (Olibie, 2010). This study posits that in settings like Badagry, these contextual challenges, attitudinal, infrastructural, and systemic, may have a more substantial impact on record-keeping efficacy than the demographic or departmental affiliations of administrators, a premise tested in the subsequent methodology.

2.5 Education information and changes in educational management

The complex nature of the Nigerian education system compels school managers to continually adapt and assume new roles in the implementation of government policies. Historically, the core responsibilities of the School Management Team (SMT) have focused on instructional leadership, enhancing teacher capacity, and improving student academic outcomes (Olibie, 2010). Thus, due to changes in all educational settings, the roles of all SMT were expanded beyond the initial operations. Below are some of the additional responsibilities:

- (1) SMT is now to manage all academic and administrative activities of the school. This includes educational planning, assigning teachers to classes as scheduled in the timetable, procurement of teaching aids, and on-the-job training for staff.
- (2) Monitoring and evaluation of staff and learners' performance using the National Policy on Education guidelines as a yardstick. This will later serve as a guide to staff and learners' development plan.
- (3) Maintenance of school plants.
- (4) SMTs are expected to source additional educational funds from external bodies, such as the town (well-wishers, immediate community, alumni, etc); they must not levy any charges on learners in monetary matters. Because the imprest from the government is meager and delayed.
- (5) In this IT age, SMT must provide continuous training for teachers and non-teaching staff for the holistic development of the school.

Yet the use of laboratory and cabinet for record keeping and processing cannot be overemphasized in the study of Educational Management Information System (EMIS) (Cuartero & Role, 2018). Hua & Herstein (2003) came up with the opinion that Laboratory Information Management Systems (LIMS) and Electronic Laboratory Notebooks (ELNs) are the two major types of tools that have been developed. The institution has embraced these systems due, in part, to intellectual property concerns. LIMS and ELN systems have been extremely helpful in managing laboratories and electronic information to generate a great deal of data and use standardized procedures, which is often the case in institutional and clinical labs and school quality control facilities.

2.6 Changes in educational management

Educational change in Nigeria is intrinsically linked to systemic reforms. As Francis (2012) suggests, the very concept of "change" indicates a prevailing dissatisfaction with the status quo in the nation's education sector. Consequently, change can be understood as the process of rectifying deficiencies and amending elements within a system that are deemed ineffective or undesirable. This represents a fundamental paradigm shift from established methods and ideologies. Theron (2007) outlines a structured five-stage model for this process: it commences with diagnosis, an analysis of the current policy's strengths and weaknesses; followed by planning, where data from the diagnosis informs the search for alternatives; implementation, which enacts the change; stabilisation, where the new policy is monitored and integrated into the school system; and finally evaluation, to assess whether the policy's objectives have been met.

The Nigerian education system is significantly influenced by the country's dynamic political and socio-economic landscape. Positioned as the second tier of education, the secondary level is widely regarded as a foundational element for creating national policies designed to foster societal growth and development (Espero, 2024). In response, the Ministry of Education formulates and guides its policies to align with international and national benchmarks. These include United Nations educational programmes, the Millennium Development Goals (MDGs) focusing on universal and equitable education, and the standards for quality education outlined in the National Economic Empowerment and Development Strategy (Education Reform Act, 2007).

Contemporary education systems are characterized by growing complexity and escalating demands at every level. Research indicates that when stakeholders engage directly and substantively in educational decision-making, it correlates with enhanced quality. This evidence has spurred increased interest in decentralizing authority and fostering community involvement, strategies seen as vital for making educational systems more responsive and adaptive to the needs they serve (Singh et al., 2024; Virvidaki et al., 2024).

The process of effective teaching and learning is embedded within a broader administrative and socio-economic framework. The role of educational management is to support educators and establish the conditions essential for enhancing quality (World Bank, 2014). For instance, advancing literacy can be a pivotal factor in disrupting intergenerational poverty in disadvantaged communities. Furthermore, the caliber of decisions made by officials at the district, regional, and national levels has a direct and profound influence on the realities of the classroom and the overall school environment.

3. METHODOLOGY

The study adopted a descriptive survey design. The population comprised students from public secondary schools within the Badagry Local Government Area of Lagos State, Nigeria. Badagry was selected as the research location because, as a semi-urban locality with a mix of government schools, it presents a typical case of the infrastructural and administrative challenges common to many public secondary schools across Nigeria, particularly in terms of resource allocation and record-keeping practices.

The study involved five (5) selected schools from the Local Educational District of Badagry zone. A total sample of 100 students (20 from each school) was used. This sample size was deemed adequate for an initial exploratory and descriptive study of this nature, aiming to identify key trends and challenges rather than to generalize it to the entire national population. The students were selected using stratified random sampling techniques, and each of them responded to the items on the questionnaire, which was distributed to them.

The instrument used to collect data was a questionnaire containing items based on the research hypotheses. The questionnaire consisted of two (2) sections. Section A collected personal information (e.g., Gender, Age, Department). Section B contained items that required responses on a four-point Likert scale: 'SA' for Strongly Agreed, 'A' for Agreed, 'D' for Disagreed, and 'SD' for Strongly Disagreed. A key limitation acknowledged is that the sample, while providing valuable insights, is not statistically representative of all Nigerian secondary schools. The findings are therefore interpreted as indicative of the conditions within the studied context of Badagry.

The results were analyzed using Cronbach's Alpha, in which the corresponding even numbers and corresponding odd numbers were selected separately and correlated using a 0.87 high positive correlation. This ensured a highly positive reliability of the instrument. Data obtained from the respondents were analyzed using the mean to answer the research questions, while Chi-Square was used to test the hypotheses at a 0.05 level of significance.

4. RESULTS

Based on the data presented, the results of the tests for all three null hypotheses indicate that they are all accepted because the probability values (p -values) exceed the significance threshold of 0.05. In Table 1, the results of the chi-square test between gender and managerial skills in data recording and processing show a χ^2 value of 7.817 with $df = 1$ and $p = 0.452$, so H_{01} is accepted, meaning that gender has no significant implication on managerial skills for data recording and processing. Furthermore, Table 2 presents the results of the chi-square test between the department where data administrators work and its influence on data recording and processing; the results show $\chi^2 = 11.207$, $df = 9$, and $p = 0.262$, so H_{02} is accepted, indicating that there is no significant influence of the department on these processes. Finally, Table 3 shows the results of the chi-square test between the information storage location (computer lab or cabinet) and student data processing, namely $\chi^2 = 5.347$, $df = 8$, and $p = 0.720$; thus, H_{03} is accepted, meaning that storing information in a computer lab or in a cabinet does not have a significant effect on student data processing. Thus, overall, the three independent variables tested were found to be statistically insignificant at the 5% level.

Table 1. Result of chi-square between gender and managerial skills for record keeping and processing

Variables	χ^2	df	P-value	Decision
Gender	7.817	1	0.452	Not Significant

Table 2. Result of chi-square between the department that has a data administrator and the effect on the record keeping and processing

Variables	χ^2	df	P-value	Decision
Department that has a data administrator	11.207	9	0.262	Not Significant

Table 3. Result of chi-square between the saving of information in the computer laboratory or the cabinet and the effect on the processing of students' records

Variables	χ^2	df	P-value	Decision
Saving of information in the computer laboratory	5.347	8	0.720	Not Significant

5. DISCUSSION

The findings of this study, which showed no significant effects for gender, departmental affiliation, or storage location on record-keeping efficacy, provide important insights into the contextual challenges of implementing an Education Management Information System (EMIS) in secondary schools. These results are best understood not as evidence that these factors are irrelevant, but as indicators that more fundamental systemic barriers may be overriding their influence in settings like Badagry. From a systems theory perspective (Von Bertalanffy, 1968; 1972), an EMIS functions as an open system where inputs (staff attributes, storage methods) are mediated by environmental factors such as infrastructure, leadership support, and organizational culture. When these macro-level factors are severely constrained, the influence of micro-level variables like gender or department becomes statistically undetectable. Thus, the non-significant findings do not imply a true zero effect but rather a suppression effect caused by more dominant, systemic deficiencies.

The non-significant role of gender (H_{01}) aligns with modern management theory that emphasizes competency over gender. However, it somewhat contrasts with studies highlighting how gender status beliefs can shape workplace dynamics and authority (Nkata, 2020). The findings of this study suggest that, in the specific context of school record-keeping, a task often perceived as administrative rather than leadership-oriented, gender stereotypes may have less sway. This can be explained through role congruity theory (Eagly & Karau, 2002): gender-based expectations are strongest in roles associated with authority or decision-making. Record-keeping, being a procedural and support-oriented function, falls outside the typical arena where gender bias operates. Consequently, the absence of a gender effect is theoretically coherent—routine administrative tasks may serve as an equalizer. Furthermore, this finding challenges the assumption that gender inequality is universal across all job functions within educational institutions. The practical implication is that EMIS training and role assignment should be merit-based, opening opportunities to all qualified staff and focusing on skill development irrespective of gender.

The finding that the data administrator's department (H_{02}) had no significant effect resonates with Thorn's (2001) assertion that data administration principles are universal across disciplines. This supports the argument for treating educational data management as a centralized, institutional function rather than a duty relegated to a specific academic department. However, a deeper interpretation emerges when considering organizational socialization theory (Van Maanen & Schein, 1979). The non-significant result suggests that departmental cultures—whether science, arts, or administration—do not meaningfully shape how individuals perform data processing tasks. This implies that record-keeping practices are likely governed by a weak organizational script, meaning no department has developed a distinctive or superior approach. While this finding refutes the hypothesis of departmental variation, it simultaneously signals a lack of specialized expertise anywhere in the school, which is itself a problem. The absence of departmental effect does not mean all departments perform well; rather, they perform equally poorly or moderately. The key implication for EMIS implementation is the need for clear institutional policies that define data stewardship roles and protocols that transcend departmental boundaries, ensuring consistency and accountability.

Similarly, the non-significant result for storage location (H_{03}) offers a critical lesson. While tools like Laboratory Information Management Systems (LIMS) are recognized for managing standardized data (Hua & Herstein, 2003; Davenport, 2004), findings imply that simply moving records from a cabinet to a computer lab is insufficient. The underlying processes and accessibility are paramount. This highlights a common pitfall in EMIS adoption: mistaking digitization for effective information management. Extending this finding with sociotechnical systems theory (Trist & Bamforth, 1951), any technological change (e.g., shifting storage to a computer lab) must be accompanied by corresponding changes in work processes, skills, and incentives. When storage location alone is altered without redesigning retrieval protocols, data entry standards, or staff digital literacy, no performance improvement materializes. Moreover, the non-significant result may reflect the reality that computers in the lab were either non-functional, not networked, or used intermittently—common issues in resource-constrained school settings. Therefore, the finding warns against hardware-centric interventions. It aligns with the concept of "technology as fetish," where the presence of equipment is mistaken for effective use. The practical recommendation is that schools must invest in workflow redesign and user training alongside any technological upgrade.

Collectively, these findings shift the focus from who manages the records or where they are kept to how the entire system is supported. The primary constraints to effective record-keeping and, by extension, successful EMIS implementation in this context appear to be the broader challenges identified in the problem statement: inadequate resources, poor infrastructure, and negative stakeholder attitudes. This conclusion is

consistent with contingency theory (Donaldson, 2001), which argues that the effectiveness of any management practice—including EMIS—depends on its fit with the external environment. In a low-resource environment with irregular electricity, limited computers, and low data literacy, even the best-designed gender-neutral policies or departmental assignments will produce null effects. Thus, the study's findings are not disappointing but diagnostic: they reveal that the EMIS bottleneck lies at the infrastructural and motivational level, not at the demographic or procedural level. Furthermore, the results contribute to the growing literature on EMIS failure in developing countries, suggesting that replication of technical solutions without addressing basic conditions leads to statistically non-significant outcomes, which is itself a significant finding for policymakers. Therefore, for EMIS to be relevant, interventions must first address these foundational issues. Policy must mandate and fund basic ICT infrastructure. School management must champion a culture of data discipline, and continuous, practical training must be provided for all staff involved in data handling. Future research should employ qualitative methods or mixed designs to uncover the specific mechanisms—such as power outages, lack of software training, or absent supervisory enforcement—that suppress the effects of gender, department, and storage location.

6. LIMITATIONS AND FUTURE RESEARCH

This study's findings are limited by its sample size and confinement to one local government area. The use of student perceptions to gauge managerial skill is another limitation, as direct assessment of administrative staff would provide more direct evidence. Future research should involve larger, multi-site samples and mixed-methods approaches, incorporating interviews with school administrators to gain deeper insight into the operational barriers to EMIS adoption.

7. CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

This study investigated the relevance of the Educational Management Information System (EMIS) to record keeping and processing in secondary schools in Badagry, Lagos State, Nigeria. The findings indicate that while EMIS is conceptually designed to streamline data management and aid decision-making, its practical relevance in the studied context is currently constrained by more fundamental systemic barriers. The analysis revealed that factors such as the gender or departmental affiliation of personnel and the physical storage location of records did not significantly impact the efficacy of record processing. Instead, the relevance and potential of EMIS are primarily mediated by overarching challenges, including inadequate infrastructural resources, lack of procedural manuals, and insufficient technical training and support for staff. Therefore, it is concluded that for EMIS to become truly relevant and operational in these schools, strategic planners must first address these foundational issues of infrastructure, clear policy-guided procedures, and human capacity development, rather than focusing on administrator demographics or simple digitization of storage.

7.2 Recommendations

As it's obvious that information is the basis of management, planning, and evaluation of educational system, and these can be achieved with a total understanding of the concept of EMIS. The following are my recommendations:

- (1) That EMIS should always communicate all stakeholders about its methodology, operations, strengths, weaknesses, opportunities, and threats (SWOT)
- (2) Set a time-lag for recording for retention and disposal, since closing of full files and opening of new ones will not help the matter.
- (3) The filling manual should be designed for all record officers to avoid boredom while working.
- (4) For record safety, it should be saved in the computer. In the IT age, cloud storage has minimized the loss of documents. There is a need to key into this to avoid littering offices with files.
- (5) An ideal, serene, and air-conditioned office is better to house files or computer systems to prevent dust and the growth of unwanted organisms in the storage.
- (6) A skilled record officer should be employed, or existing officers should be equipped with the needed training to meet the record-keeping demands.

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DECLARATION OF INTEREST

There are no conflicts of interest.

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ETHICAL STATEMENT

Not applicable.

AI USE STATEMENT

“The authors declare that the generative artificial intelligence (AI) tool [ChatGPT, Google Scholar] was used exclusively for language editing and/or grammatical improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the manuscript. Full responsibility for the content remains with the authors.”

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