





Development of indicators to evaluate the inclusive education of Deaf students: An institutional and organizational approach based on a literature review

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ABSTRACT

Article History

Received: 16 December 2025

Revised: 24 February 2026

Accepted: 13 March 2026

Published: 20 April 2026

Keywords

Assessment indicators

Deaf students

Educational policies

Inclusive education

Mozambique.

The article analyzes the development of indicators for evaluating inclusive education for the Deaf in the Republic of Mozambique. It begins with the recognition that, despite legal and political advances, significant gaps remain in monitoring and evaluation mechanisms. Based on foundations established in international frameworks such as the Salamanca Statement and the Convention on the Rights of Persons with Disabilities, as well as in national legislation, particularly Law No. 18/2018 and the Inclusive Education Strategy 2020-2029, the research emphasizes that effective inclusion requires, in addition to regulations, assessment instruments sensitive to the linguistic, cultural, and pedagogical specifics of deafness. The study employed methodologies based on a qualitative and exploratory approach, utilizing systematic literature reviews and content analysis of regulatory documents and relevant scientific studies. The results highlight the scarcity of specific indicators for Deaf students, along with the predominance of generic models that overlook important aspects such as Mozambican Sign Language, bilingual training for teachers and interpreters, communication accessibility, and the participation of the Deaf community. The study contributes a model of indicators that integrates the necessary dimensions for school management to promote inclusive education for Deaf students in Mozambique.

Contribution/Originality: As its main contribution, the article proposes an integrated model of institutional indicators, structured into political-pedagogical, innovative, structural, practical, and integrative dimensions. This model aims to support school management, guide public policies, and promote a more equitable, accessible, and culturally relevant education for Deaf students in Mozambique.

1. INTRODUCTION

Inclusive education has gained significant importance in recent decades as a fundamental principle to promote equity and quality within the educational system. It aligns with globally approved guidelines, such as the Declaration on Principles and Practices in the Field of Special Educational Needs adopted in Salamanca, Spain, by UNESCO member states in 1994 (cited in Bravo, Zamora, and Sempértégui (2025)), the Convention on the Rights of Persons

with Disabilities approved by the United Nations in 2006 (cited in Batti, Stumpf, and Luchi (2025)), and Mozambique's National Policies for the Education System (Law 18/2018) and Resolution 20/2020 on the Strategy for Inclusive Education. These frameworks reflect the increasing recognition of including students with Special Educational Needs (SEN), particularly Deaf students, in mainstream schools (Assembly of the Republic, 2023; Ministry of Education and Human Development, 2020). The application of this is an important legal advancement. However, the lack of specific indicators to evaluate the inclusion of Deaf students presents an obstacle to monitoring and continuous improvement of these policies. Effective educational inclusion requires more than just laws and general guidelines; it requires well-defined evaluation mechanisms that recognize the complexity of deafness as a linguistic and cultural condition.

As highlighted in the Declaration adopted at the Salamanca Conference, approved by UNESCO (1994, cited in Bravo et al. (2025)) inclusive education must be adapted to the specific needs of each student with a disability, respecting their identity and their own modes of communication. However, the effectiveness of these policies and practices depends on the existence of consistent indicators that allow for the systematic evaluation of educational inclusion at the institutional and organizational levels.

This article focuses on the development of indicators to evaluate the inclusion of Deaf students. This approach aims to integrate political, pedagogical, and administrative aspects, contributing to the improvement of school management to create fairer and more inclusive learning spaces, with the aim of making education accessible and equal for everyone and building teaching environments that promote equity and accessibility.

The literature review is based on regulatory documents, scientific studies, and technical proposals such as the Inclusion Index (Booth & Ainscow, 2002) the indicators presented by the European Agency for Special Needs and Inclusive Education (Kyriazopoulou & Weber, 2009) and the research conducted by Molena, Andrade, and Veraszto (2017) that analyze the educational inclusion of Deaf students.

The justification for this study lies in the scarcity of assessment tools adapted to the characteristics of Deaf students' education, which enables schools, administrators, and public policy officials to supervise and improve inclusion processes. The central question guiding this research is: What institutional and organizational indicators can be developed to effectively evaluate the inclusion of Deaf students in the school environment? In response, the article proposes the systematization of a set of indicators, based on theoretical and normative evidence, that can serve as a quality reference in evaluating educational inclusion. The objectives of the article are: (1) to critically analyze the main bibliographic references on inclusive education and the inclusion of Deaf students; (2) to identify the relevant categories and dimensions for institutional and organizational evaluation; and (3) to propose a set of indicators that can support inclusive educational practices and serve as a basis for public policy.

2. LITERATURE REVIEW

To understand the development of indicators to assess inclusive education, especially for Deaf students, a solid theoretical foundation is required, covering everything from international regulatory frameworks to methodological approaches to assessment and proposals for specific indicators. This section delves into the conceptual pillars that support the research, contextualizing them within the Mozambican reality and global trends.

2.1. International Policies as a Reference

The global framework of inclusive education is strongly influenced by highly relevant documents that serve as a guide for national policies and practices. The Salamanca Statement, adopted by several UN Member States in 1994 in Salamanca, was a landmark in advocating the right to education for all children in regular schools, taking into account each student's disabilities and/or differences adapting to their needs and promoting an environment of respect for diversity and equity (UNESCO, 1994, cited in Bravo et al. (2025)).

Furthermore, the Convention of the Right Persons with Disabilities, approved in 2006 by the UN Member States that are signatories, reinforces this commitment, stipulating that governments must ensure an inclusive educational

system across all educational subsystems, reducing, and/or eliminating the barriers that hinder a universal standard for inclusion (UN, 2006, cited by Batti et al. (2025)), guiding nations in the formulation of their own legislation and educational strategies. The influence of these documents is notable in educational reforms, Law No. 18/2018 (Assembly of the Republic, 2018) known as the Law of National Educational System, and the Inclusive Education Strategy 2020-2029, approved by Resolution No. 20/2020, reflect the incorporation of these international principles into the Mozambican regulatory framework, approved by the Ministry of Education and Human Development (2020).

These policies, which now include the inclusion of students with Special Educational Needs in general and Deaf students in particular as a fundamental right, represent an important step forward. However, these policies require robust evaluation systems to monitor their effectiveness and identify shortcomings, especially in the specific context of higher education, ensuring that theory is translated into practice (Assembly of the Republic, 2025).

2.2. Institutional and Participatory Evaluation

For inclusive education to be effective and sustainable, it is essential to adopt evaluation models that go beyond simplistic quantitative metrics. Participatory Institutional Evaluation (PIE) stands out as a promising approach, as it proposes a democratic and comprehensive process. As noted by Moreira, Marques, and Carvalho (2024), the PIE involves multiple actors from the academic community, including teachers, students (with and without disabilities), parents, sign language interpreters, and administrators in the collaborative construction of quality indicators.

This methodology values diverse perspectives, ensuring that the indicators reflect not only institutional objectives but also the real experiences and needs of those involved. The PIE approach to contextualization, the promotion of equity, and the generation of institutional change are particularly relevant for the inclusion of Deaf students. The success of this inclusion depends intrinsically on a complex interaction of pedagogical variables (Such as adapted teaching methodologies), linguistic variables (Access to sign language and Portuguese), and structural variables (Providing resources for physical and communicative accessibility), which can only be properly assessed through a participatory and multifaceted process. Traditional evaluation, which often focuses on standardized results, tends to overlook the richness and complexity of the inclusion process (Bouzas & Del Moral Pérez, 2022; Moreira et al., 2024).

2.3. Inclusion Indicators: Proposal and Experiences

The development of specific indicators for inclusive education is a fundamental step to translate theoretical principles into measurable actions. Molena et al. (2017) present some examples of indicators that can be implemented, specifically the development of a detailed matrix with twelve categories of indicators applicable to the inclusion of Deaf students in science education. Among the critical aspects are the presence of unqualified sign language interpreters and the adoption of teaching methodologies that address the visual specificities of learning for Deaf individuals. The importance of joint planning between teachers and interpreters, curricular flexibility to adapt to different learning paces, and the implementation of various assessment methods are considered linguistic and cognitive particularities that must be taken into account in the education of Deaf students.

These indicators, by detailing the daily challenges of inclusive teaching practice, become valuable tools for the Mozambican context, where the adaptation of the curriculum and the training of human resources are significant gaps that must be addressed (Molena et al., 2017; Pritchard, Morris, Billah, & Balanoi, 2025). In addition to the specific proposals for Deaf students, other models of inclusion indicators offer a more comprehensive view of the dimensions that should be evaluated.

Kyriazopoulou and Weber (2009) proposed a set of indicators covering crucial dimensions such as the active participation of students in the school process, the effective participation of parents in school life, the continuous training of teachers to address diversity, the organizational structure of schools that promote inclusion, and the development of strong support policies.

These models demonstrate that the evaluation of inclusive education goes beyond merely counting students enrolled with disabilities, encompassing pedagogical, psychosocial, political, and structural aspects that are decisive for the quality and effectiveness of the inclusion process (Kyriazopoulou & Weber, 2009). The combination of these perspectives allows for the creation of an evaluation system that not only measures progress but also guides decision-making toward increasingly inclusive and equitable education in Mozambique.

3. METHODOLOGY

This research adopted a qualitative methodology, which proved to be the most suitable for gaining a deeper understanding of complex and contextual social phenomena. Regarding its objectives, this study is exploratory in nature. Exploratory research is recommended when the topic is little known or systematized, which allows the researcher to become familiar with the problem. Exploratory research aims to provide a greater understanding of a phenomenon, especially when there is a lack of applied studies, as is the case with indicators of inclusion for Deaf students in Mozambican school contexts (Creswell & Creswell, 2022; Lundin, 2016; Ñaupas, Valdivia, Palacios, & Romero, 2018; Ramos, 2021).

3.1. Data Collection and Analysis

The main strategy for data collection in this study was a systematic review of the literature. This scientific procedure focused on the evaluation, condensation, and interpretation of already existing information, both theoretical and conceptual, on the specific topic of inclusive education and Deaf students. The literature review thus emerged as a fundamental tool for understanding the various practical approaches and theories on the subject, allowing for the exploration of the application of educational technologies in the process of inclusive education for Deaf students at the higher education level.

The sources for this literature review were selected through research in academic databases, digital archives, scientific journals, and other highly credible sources. The search was guided by keywords directly related to the study's objective, ensuring the relevance of the materials collected. In addition to the bibliographic search for this research, a documentary consultation was also carried out to enrich the analysis with specific information and data from the Mozambique context.

For the analysis and discussion of the data, Content Analysis was used, a robust technique for interpreting information (Creswell & Creswell, 2022; Ramos, 2021). The method's logical process involved a thorough reading of the selected texts, with the aim of identifying and classifying themes, patterns, discrepancies, and gaps in existing knowledge. This procedure allowed not only the synthesis of information but also to build a critical interpretation of the application of educational technologies. The analysis revealed the urgent need to define effective indicators that can guide and evaluate the inclusion of Deaf students in Mozambique's education system.

4. RESULTS AND DISCUSSIONS

This section is dedicated to the in-depth analysis and critical discussion of the development of indicators for evaluating inclusive education, with special attention to Deaf students in the Mozambican context. The literature review conducted for this study reveals an inherent complexity in this topic, which manifests both on the global stage and in the particularities of the local environment in Mozambique.

It is therefore imperative to establish clear and contextualized metrics that allow for monitoring the effectiveness of inclusive policies and practices. This need arises from the urgency of overcoming existing deficiencies or gaps in evaluation, directing efforts toward a path of genuine transformation in education. The main gaps identified in the literature, the integration of the principles of international policies, Mozambican legislation as a fundamental pillar, and finally, the challenges and opportunities presented in the development and application of these indicators will be addressed. Current literature reveals a marked scarcity of specific and detailed indicators for evaluating the inclusion

of Deaf students in Mozambique. According to Booth and Ainscow (2002) and Kumari, Bika, and Bhesera (2024) it is important to understand that the process of inclusion is not a destination for students with Special Educational Needs, but rather an ongoing system of educational practices transformation that allows students to benefit from educational processes. Despite the existence of broader structures for inclusive education, such as those suggested by Kyriazopoulou and Weber (2009), Díaz Pereira, Delgado-Parada, and Ricoy (2024); Edström, Gardelli, and Backman (2024) and Ohonba (2025) these are often generic. They fail to capture the essential particularities of the educational experience of Deaf students, which include crucial aspects such as Deaf Culture, proficiency and use of sign language, and the availability of properly qualified professionals, such as interpreters and bilingual teachers, who are fundamental to the learning process of these students (Molena et al., 2017).

This deficiency in the specificity of indicators is particularly problematic. Without metrics that consider the complexity of the context of Deaf students, inclusion assessment risks being superficial and ineffective. For example, simply counting the number of enrolled Deaf students does not reflect the quality of their educational experience, nor the degree of linguistic or pedagogical accessibility provided by the institution. The lack of attention to aspects such as the development of Mozambican Sign Language (MSL) or the ongoing training of interpreters can lead to a false perception of success, hiding deep challenges in the integration and academic performance of these students (Xavier, Teblo, & Manjinski, 2025).

Additionally, educational institutions in Mozambique, especially at the higher education level, do not have systematic evaluation protocols that are adapted to their local and linguistic realities. Even with the best political intentions and the existence of progressive legislation, the lack of appropriate measurement tools prevents an accurate assessment of the progress made and the identification of areas that require urgent intervention. Without a system of indicators, institutions operate without a clear map to improve their practices. Therefore, a model of indicators is proposed that contributes to the evaluation of inclusive education for Deaf students in Mozambique, as can be seen in Tables 1 and 2.

Table 1. Indicators model for the evaluation of inclusive education for deaf students in Mozambique (Categories 1 to 3).

Categorical definition	Level of categorization		
	1 st Level (Indicators)	2 nd Level (Dimensions)	3 rd Level (Sample indicators / Practice)
I. Pedagogical-Political Assesses degree of alignment of school policies and practices with the principles of equity, recognition of linguistic diversity, and the reduction of barriers to learning and participation.	Inclusion indicators	Indicators of Inclusion for Linguistic accessibility and Inclusive School Culture	<ul style="list-style-type: none"> • Existence of institutional policies recognizing Mozambican Sign Language as a language of instruction • Functional competence of teachers, interpreters, and students in MSL • Promotion of a school environment based on respect for differences, a sense of belonging, and active participation of Deaf students
II. Cultural-Innovative It analyzes the school's ability to develop inclusive cultures, promoting creativity, collaboration, and valuing Deaf identity.	Inclusive Creativity Indicators	Methodological Flexibility and Visual Strategies	<ul style="list-style-type: none"> • Systematic use of bilingual methodologies (MSL/Written Portuguese) • Use of visual resources, visual narratives, and multimodal pedagogies • Valuing Deaf culture as a pedagogical resource rather than a limitation
III. Structural Examines the human, material and technological resources mobilized to minimize barriers to learning and participation.	Resource Indicators	Human Technological and Community Capital	<ul style="list-style-type: none"> • Adequate percentage of qualified MSL interpreters, per school • Availability of accessible materials (videos in MSL, adapted visual materials) • Integration of assistive technologies and local community resources

Source: Booth and Ainscow (2002); Alvarez and Rodríguez (2023); Hartmann, Lenkeit, Knigge, Ehlert, and Spörer (2025); Kyriazopoulou and Weber (2009); Molena et al. (2017), and Navarro-Montaño, López-Martínez, and Rodríguez-Gallego (2021).

Table 2. Indicators model for the evaluation of inclusive education for deaf students in Mozambique (Categories 4 to 6).

Categorical definition	Level of categorization		
	1 st Level (Indicators)	2 nd Level (Dimensions)	3 rd Level (Sample indicators / Practice)
IV. Pedagogical practice Evaluates the organization of education, active participation of students, and the adaptation of strategies to individual differences	Participation indicators	Commitment, interaction and zone of proximal development	<ul style="list-style-type: none"> • Collaborative activities between Deaf and hearing students (Pairs/Groups). • Pedagogical strategies that promote the Zone of Proximal Development (ZPD) • Use of body expression, dramatization, and active learning as means of accessing the curriculum
V. Institutional management Analyzes leadership, planning and decision-making process from the perspective of democratic and inclusive management	Governance indicators	Inclusive planning and social participation	<ul style="list-style-type: none"> • Joint pedagogical planning between teachers and interpreters • Involvement of the local Deaf community and families in decision-making process • Participatory institutional evaluation aimed at the continuous improvement of inclusion
VI. Curricular integrator Summarize the degree of alignment between inclusive values, institutional policies and pedagogical practices	Coherence indicators	Inclusive curriculum alignment	<ul style="list-style-type: none"> • Coherence between inclusion objectives, pedagogical strategies, and resources used • Cross-cutting integration of linguistic accessibility into the curriculum • Monitoring of the impact of inclusive practices on the learning and participation of Deaf students

Source: Booth and Ainscow (2002); Alvarez and Rodríguez (2023); Hartmann et al. (2025); Kyriazopoulou and Weber (2009); Molena et al. (2017), and Navarro-Montaño et al. (2021).

Ultimately, the lack of clear, specific indicators becomes a significant obstacle for Mozambican Educational institutions to effectively assess whether they are truly providing an accessible and equitable environment for Deaf students. This perpetuates a gap between the political intention of inclusion and effective practice in daily academic life. Overcoming this gap requires a coordinated effort to develop and implement indicators that reflect the richness and particularities of education for Deaf students, ensuring policies translate into tangible and measurable outcomes for the Deaf community in Mozambique.

International policies are essential pillars for establishing truly inclusive education, serving as a guide for the development of effective indicators (Lima, Garcia-Valcárcel, & Meirinhos, 2025; Maisto, Zanella, & Konrath, 2025; Matos, Coutinho, & Souza, 2024; Vieriu, 2025). The decisions stemming from the Salamanca Conference and the Convention on the Rights of Persons with Disabilities set global ethical and legal guidelines (UN, 2026, cited in Batti et al. (2025); UNESCO, 1994, cited in Bravo et al. (2025)), where it was incisively argued that education must be a right accessible to everyone, promoting environments that not only accept diversity but also ensure full equity in the educational process.

These international regulatory frameworks create the imperative for nations to adopt their educational systems, ensuring that no student is excluded from the educational system due to their condition (differences). The influence of these documents extends to the need to develop robust indicators that allow monitoring the application of inclusion principles; this means going beyond generic metrics, focusing on crucial aspects such as linguistic accessibility and the training of specialized professionals.

The indicators should, for example, measure the availability and quality of instruction in Mozambican Sign Language (MSL), the suitability of teaching materials for the Deaf audience, and the competence of interpreters. This approach reflects a commitment to active participation and the development of guidelines that focus on the practical elements of inclusion (Alvarez & Rodríguez, 2023; Molena et al., 2017). The transposition of these international guidelines to the national level requires continuous alignment of domestic policies. For Mozambique, the adoption of

the principles of the Salamanca Statement and the UN Convention into national legislation is a positive step, but needs to be accompanied by the creation of specific evaluation mechanisms. Only with well-defined indicators is it possible to verify whether the ideals of accessibility and equity are being realized in teaching practices and in a school environment that truly accepts and promotes the potential of students, especially those who rely on differentiated communication methods and adapted teaching strategies.

For Deaf students, the application of these international principles should be reflected in indicators that prioritize.

- Linguistic accessibility: this includes ensuring the provision and quality of instruction in Mozambican Sign Language (MSL) as the primary means of communication and instruction, as well as access to written Portuguese. Indicators in this domain could measure the proportion of classrooms with qualified interpretation, the availability of educational materials in MSL or visually adapted, and students' competence in MSL and Portuguese.
- Teacher training in bilingual education: the quality of inclusion depends directly on the ability of educators. Essential indicators include the percentage of teachers and interpreters with specific training in Deaf education and sign language, and their ability to implement bilingual and visual pedagogical methodologies.
- Active participation of Deaf individuals in school process: more than just enrollment, true inclusion is measured by participation of Deaf students in curricular and extracurricular activities, their interaction with peers and teachers, and their voice in school decision-making processes, reflecting on the importance of Participatory Institutional Evaluation (Moreira et al., 2024).

Mozambique has demonstrated a remarkable commitment to inclusive education through its legislation. Law No. 18/2018 and Resolution No. 20/2020 are important regulatory frameworks that introduce valuable principles, such as education for all and the appreciation of diversity (Assembly of the Republic, 2018; Ministry of Education and Human Development, 2020). These documents establish a solid basis for inclusion, but their effectiveness is compromised by the absence of mechanisms for objective evaluation and accountability.

The lack of concrete and measurable indicators at the legislative level severely limits the monitoring of established goals and the ability to diagnose the real obstacles in the implementation of inclusion. Without these indicators, it becomes difficult to determine whether legal principles are being translated into effective educational practices. This gap prevents policies from being adjusted based on evidence, maintaining a cycle of intentions without proper verification of results.

Legislation, although well-intentioned, needs a robust complement in terms of evaluation tools to ensure that inclusion is not just a concept, but a reality experienced by Deaf students and their families. The path to development and application of inclusive education indicators for Deaf students in Mozambique is marked by challenges and, in the same time, by significant opportunities.

Among the most important challenges are:

- Insufficient training of teachers and interpreters: the lack of qualified professionals to work with Deaf students, both in the mastery of MSL and in adapted pedagogical methodologies, is a considerable obstacle to the quality of education (Moreira et al., 2024). Without proper training, even the best indicators will not be able to measure the impact of practices that have not yet been fully implemented.
- Lack of disaggregated statistical data on Deaf students: the lack of accurate information on the number, location and educational trajectory of Deaf students makes it difficult to plan effective policies and evaluate the reach of inclusion.
- Lack of evaluations adapted to deafness: standardized assessment systems often do not take into account the linguistic and cognitive particularities of Deaf students, generating results that do not reflect their true abilities and learning.

However, these challenges also open doors to valuable opportunities.

- Mobilization of networks of researchers for developing indicators: collaboration among research centers, civil society organizations, universities, and state and international bodies can promote the creation of indicators that are contextually relevant and scientifically robust.
- Application of participatory methodologies (Such as Participatory Institutional Evaluation) for the design of evaluation tools: directly involving the Deaf community teachers, parents, and policy makers in the process of developing indicators ensures that these reflect real needs and priorities, promoting greater acceptance and commitment to inclusion initiatives (Moreira et al., 2024).
- Use of international experience as a basis for local adaptation: successful models of indicators and evaluation practices in other contexts, such as the proposals by Kyriazopoulou and Weber (2009) and Molena et al. (2017), can serve as inspiration and a starting point for creating tools adapted to the Mozambican context, avoiding reinventing the wheel and optimizing resources.

In short, the discussion about developing indicators for inclusive education for Deaf students highlights the urgency to fill methodological and practical gaps, taking advantage of the strength of international policies and national legislation to build an evaluation system that not only measures but also actively promotes education that benefits everyone.

5. CONCLUSION

Through this article, it is evident that, despite legislative advances and alignment with the international principles of the Salamanca Declaration and the Convention on the Rights of Persons with Disabilities, the Mozambican educational system still faces significant gaps in translating political intent into effective practice, especially regarding the Deaf community.

The lack of specific indicators and the absence of evaluation protocols adapted to the local and linguistic realities for Deaf students represent a significant obstacle to monitoring and continuous improvement of inclusion. Without metrics that accurately reflect the cultural, social, and linguistic nuances of each community, it becomes difficult to identify gaps, measure progress, or propose effective interventions.

This limitation compromises the ability of institutions to formulate public policies that are sensitive to regional diversities, perpetuating inequality and making vulnerable groups invisible. In addition to this, the excessive standardization of assessment tools, often imported from foreign contexts, ignores local particularities and can generate distortion in the results.

To overcome this challenge, it is essential to invest in the collaborative construction of indicators and protocols that engage with local knowledge, value linguistic plurality, and promote truly contextualized and sustainable inclusion. The proposal of a systematized set of indicators, based on theoretical evidence and regulations, emerges as a strategic tool to mitigate these gaps or shortcomings.

By focusing on dimensions such as linguistic accessibility, linguistic competence in Mozambican Sign Language, the continuous training of teachers in bilingual education, and the active participation of Deaf students, this project offers a quality framework. These indicators aim not only to quantify inclusion but also to assess educational experiences, allowing for a deeper analysis of pedagogical, linguistic, structural, and attitudinal variables that influence the academic success and social participation of Deaf students.

Ultimately, this study emphasizes that true inclusive education for Deaf students in Mozambique goes beyond simple legal formalization, as it requires a continuous commitment to systematic evaluation through indicators that reflect the complexity of inclusion and drive the necessary transformation.

The implementation of these recommendations could not only improve educational management but also ensure that Deaf students in Mozambique have access to education that we would consider acceptable, equitable, and of quality, with properly trained professionals for full and meaningful participation in society.

Funding: This study received no specific financial support.

Institutional Review Board Statement: Not applicable.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Acknowledgments: We would like to thank Mrs. Lucy Wampler for her support in this research article.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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