

Implementation of Standardized Nursing Language (SNL) in Nursing Documentation: A Scoping Review

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ABSTRACT

Background: Nurses play a crucial role in improving the quality of care through standardized nursing practices. Standardized Nursing Language (SNL) provides as structured and systematic approach to articulating nursing care, facilitating accurate communication and promoting consistency in nursing documentation.

Purpose: This scoping review aimed to identify the implementation of SNL in nursing documentation.

Methods: A scoping review was conducted using four electronic databases: Garuda, PubMed, ScienceDirect, and Wiley. Eligible studies full text-original articles published in English or Indonesian between 2020 and August 2025 that examined SNL implementation in documentation within healthcare settings. Studies conducted in educational contexts, case reports, editorial commentaries, conference proceedings, and study protocols, were excluded.

Results: Across the 10 included studies, SNL implementation was associated with improvements nursing documentation quality. Five studies (50%) reported improved documentation accuracy and readability, while five (50%) reported more appropriate nursing diagnoses and interventions. The main implementation barriers were inadequate EHR support, limited nurses' familiarity with SNL, and lack of standardized documentation formats, each reported in five studies (50%).

Conclusion: SNL implementation is associated with improved quality and consistency of nursing documentation. Further research using implementation science frameworks is warranted to systematically examine context specific barriers and facilitators of SNL implementation.

Keywords: Healthcare Facilities, Implementation, Nurses, Nursing Documentation, Standardized Nursing Language (SNL)

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BACKGROUND

Nurses play a crucial role in improving the quality of care through effective management in the implementation of standardized nursing practices within hospitals and other healthcare facilities. One important aspect contributing to improved care quality is the use of Standardized Nursing Language (SNL). SNL refers to a standardized language used to systematically describe nursing interventions, nursing diagnoses, and nursing outcomes (Zeffiro et al., 2025). The purpose of SNL implementation is to facilitate more accurate and consistent communication among nurses and other healthcare professionals, as well as to ensure precise and comprehensive patient care documentation (Wagner et al., 2025). In Indonesia, the professional nursing organization, Persatuan Perawat Nasional Indonesia (PPNI), has established nursing care standards that serve as guidelines for nurses in conducting the nursing process and documentation. These standards include the Indonesian Nursing Diagnosis Standards (SDKI), the Indonesian Nursing Intervention Standards (SIKI), and the Indonesian Nursing Outcome Standards (SLKI) (Tauran & Tunny, 2023). Furthermore, the Decree of the Indonesian Minister of Health Number HK.01.07/MENKES.245/2020 concerning the professional standards for nurses specifies that the list of nursing diagnoses refers to SDKI, the list of nursing skills corresponds to SIKI, and the list of expected care outcomes refers to SLKI. The establishment of such guidelines and policies is expected to enhance the quality of nursing care provided by nurses across Indonesia.

Previous studies conducted both nationally and internationally have highlighted that the use of SNL contributes to improvements in care quality. A study by Santos et al. (2024) demonstrated that SNL implementation improves the accuracy of nursing documentation, facilitates collaboration among healthcare team members, and enhances understanding of patient conditions in a clearer and more systematic manner. Similarly, research conducted in Indonesia by Hendriana and Pranatha (2020) reported that the use of SNL in nursing documentation improves documentation completeness and enhances the overall quality of nursing services. However, despite its benefits, implementation in clinical settings often faces several challenges, including limited managerial support, inadequate training, and insufficient supervision, which may hinder successful implementation (Zhai et al., 2022). Although previous studies have demonstrated the benefits and effectiveness of SNL, the available evidence remains fragmented across different SNL systems, healthcare settings, and implementation contexts. Most existing studies primarily focus on the effectiveness and outcomes of SNL use, while limited evidence has systematically examined how SNL is implemented in routine healthcare practice and the barriers and facilitators that influence its adoption.

Therefore, a scoping review is needed to systematically map and synthesize the existing evidence on SNL implementation in healthcare settings and to identify patterns in implementation, barriers, facilitators, and gaps in the current evidence. By addressing this gap, this study contributes to nursing science by expanding the evidence base on the implementation of standardized nursing language in clinical practice, advancing understanding of the contextual and organizational factors that influence its adoption, and providing a foundation for the development of context sensitive implementation strategies. These findings may support more systematic and evidence based approaches to standardized nursing documentation, and guide future implementation research in nursing practice.

OBJECTIVE

This scoping review aims to identify the implementation of Standardized Nursing Language (SNL) in nursing documentation.

METHODS

This review employed a scoping review methodology, which was selected due to its ability to explore research topics comprehensively and systematically. The stages of this study included formulating the research question, identifying the article search keywords, conducting analysis and synthesis of the selected articles, and preparing the research report (Peters et al., 2020). To identify the implementation of Standardized Nursing Language (SNL) in nursing documentation, this study adopted the PRISMA Extension for Scoping Reviews (PRISMA-ScR) 2020 approach.

Stage 1: Identifying the Research Question

The first stage involved identifying the research question using the PCC framework, consisting of Population (P): nurses; Concept (C): implementation of Standardized Nursing Language; and Context (C): nursing documentation. Based on this framework, the research question formulated for this scoping review was: “*How is Standardized Nursing Language implemented in nursing documentation?*”

Stage 2: Identifying Search Keywords

The article search was conducted using four electronic databases: PubMed, ScienceDirect, Wiley, and Garuda. The search strategy was developed using keywords related to the Population, Concept, and Context components of the PCC frameworks and employed keywords related to nurses, implementation, Standardized Nursing Language, Standard Nursing Language, Standard Nursing Terminology, nursing documentation, and nursing process. The keywords were combined using Boolean operators (AND and OR) and adapted to the search functions of each database. The search was limited to articles published between 2020 and August 2025 to capture recent evidence on the implementation of SNL in contemporary healthcare settings.

Stage 3: Determining Inclusion and Exclusion Criteria

The inclusion and exclusion criteria used in this study are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria

No	Inclusion Criteria	No	Exclusion Criteria
1.	Articles published between 2020 and August 2025	1.	Articles focusing on SNL implementation within educational settings
2.	Original research articles	2.	Articles using case study designs, review articles, editorials, conference presentations, and study protocols
3.	Articles published in English or Indonesian		
4.	Full-text articles available		
5.	Articles discussing the implementation of SNL in nursing documentation		
6.	Studies conducted in healthcare service facility settings		

Stage 4: Article Retrieval and Selection

Articles were retrieved from the four electronic databases, and all identified records were exported in RIS format. The screening process was conducted using Rayyan software. Article selection followed the PRISMA Extension for Scoping Reviews (PRISMA-ScR) 2020 guidelines. The screening process was conducted by the first author, with the other four author reviewing the screening decisions for consistency. Prior to the screening process, the authors discussed and agreed upon the eligibility criteria and screening procedure; however, no formal calibration exercise or inter-rater reliability statistics were conducted. The results of the selection process are presented in Figure 1.

Stage 5: Article Selection

The literature search conducted across the predetermined databases, PubMed, ScienceDirect, Wiley, and Garuda, identified a total of 3,323 articles. After removing duplicated records and applying automated screening tools, 2,794 articles were excluded. Subsequently, 529 articles underwent initial screening, resulting in the exclusion of 381 articles based on predefined criteria, including studies with purely theoretical discussion without practical implementation, review articles, study protocols, and studies focusing on nursing education settings. A total of 148 articles were subjected to further screening based on title, abstract, and full-text assessment, yielding 46 eligible articles. Finally, an eligibility assessment was conducted according to the research focus, and after the final screening process, 10 articles met all inclusion criteria and were included in this scoping review.

Data extraction was conducted by the first author using a standardized data extraction form developed by the research team. The form was designed to systematically capture key characteristics of the included studies, including author and publication year, study design, study objective, country, population, type of SNL, and main findings. The authors discussed the data extraction categories and procedure before data extraction commenced; however, no formal calibration exercise or inter-rater reliability assessment was conducted. As this study was conducted as a scoping review, no formal critical appraisal or risk of bias assessment was performed for the included studies. The review focused on mapping and synthesizing the available evidence on SNL implementation rather than evaluating the methodological quality or risk of bias of individual studies.

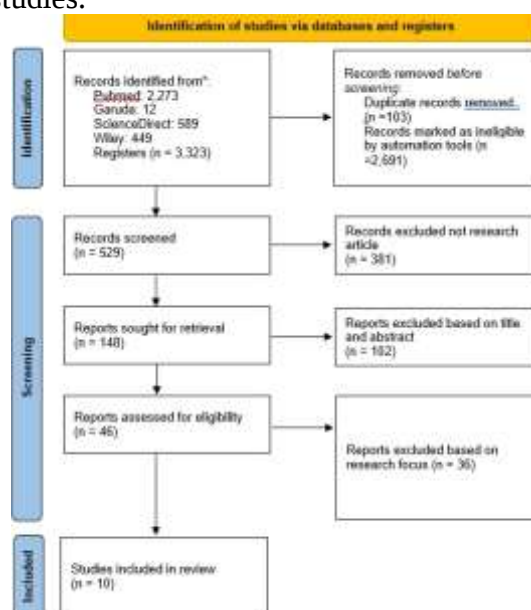


Figure 1. Prisma ScR Flow Diagram

RESULTS

The findings of this scoping review indicated that the implementation of Standardized Nursing Language (SNL) in nursing documentation is associated with improvements in documentation quality, although its implementation remains constrained by system level, organizational, and nurse-related barriers. The extracted data were subsequently organized and presented in tabular form (Table 2). The ten included studies represented evidence from Indonesia, Europe, and Africa, with six studies conducted in Indonesia and four conducted internationally. This distribution demonstrates that SNL-based nursing documentation has been implemented across both developing and developed healthcare contexts, although the extent and maturity of implementation vary according to healthcare systems, documentation infrastructure, organizational support, and nurses' competencies. The results of the article extraction are presented in Table 2.

Implementation of Standardized Nursing Language in Nursing Documentation: Benefits, Barriers, and Supporting Factors.

Based on the findings of SNL implementation in nursing documentation (Table 3), four interconnected themes emerged: improved documentation quality, implementation barriers, the role of training and supervision, and nurse-related factors. SNL implementation was consistently associated with improved documentation accuracy, readability, completeness, and consistency across different SNL systems and healthcare settings. In Indonesia, the use of SDKI, SIKI, and SLKI improvements in documentation quality, while international systems, including NANDA-I, NIC, NOC, OMAHA systems, CCC, and ICNP, were associated with more structured documentation and greater visibility of nursing practice (Ameel et al., 2020; Laukvik et al., 2024; Mahfud et al., 2025; Pranatha & Nugraha, 2023; Sulistyawati & Susmiati, 2020). However, SNL availability alone did not guarantee high quality documentation, as incomplete and irrelevant information remained evident in some EHR systems (De Groot et al., 2020).

Implementation barriers were identified across both national and international settings, particularly limited integration between SNL and EHR systems, inadequate documentation formats, and nurses' limited familiarity with SNL (Anggariswa et al., 2024; De Groot et al., 2020; Laukvik et al., 2024; Mahfud et al., 2025; Ojo & Olaogun, 2023; Pranatha & Nugraha, 2023; Somantri et al., 2021). Although these barriers occurred across countries, their priorities differed by context, Indonesian studies primarily emphasized the implementation of the national 3S system and factor related to documentation quality and nurses' competencies, whereas international studies more frequently highlighter EHR integration, interoperability, and the visibility of nursing practice (Ameel et al., 2020; De Groot et al., 2020; Laukvik et al., 2024; Ojo & Olaogun, 2023; F. C. Dos Santos et al., 2024). These findings suggest that implementation challenges are not determined solely by a country's level of development but also by health information system readiness and the extent to which SNL is embedded with routine workflows.

Training and supervision emerged as important organizational mechanisms for addressing implementation barriers. Several studies indicated training can strengthen nurses' understanding and competency in applying SNL, while supervision can reinforce adherence and consistency in documentation practices (Mahfud et al., 2025; Pranatha & Nugraha, 2023; F. C. Dos Santos et al., 2024; Sulistyawati & Susmiati, 2020). These findings indicate that SNL implementation requires the interaction of individual competency, organizational support, and appropriate technological infrastructure rather than the introduction of standardized terminology alone.

Overall, the synthesis demonstrates that SNL implementation is a multifaceted process in which documentation quality influenced by the interaction between standardized terminology, health information system readiness, organizational support, and nurses' knowledge and competencies.

Table 2. Analysis of Findings and Data Extraction

No	Author and Year	Study Design	Aim	Country	Population	Type of SNL	Findings
1.	(De Groot et al., 2020)	Cross-sectional	To explore the use of SNL in EHRs	Netherlands	667 nurses	NANDA-I, NIC, NOC, OMAHA System, CCC, ICNP	Only 50% of nurses used SNL in EHRs. Although nurses perceived EHRs helpful, substantial amounts of information remained incomplete and irrelevant.
2.	(Pranatha & Nugraha, 2023)	Quasi-experiment	To analyze the effect of implementing SDKI, SLKI, and SIKI on the quality of nursing documentation	Indonesia	17 nurses	SDKI, SLKI, SIKI	Documentation quality scores significantly increased ($p = 0.030$). The implementation of SNL improved the accuracy, readability, and completeness of nursing documentation.
3.	(Mahfud et al., 2025)	Quasi-experimental	To evaluate the impact of SNL on nursing documentation performance	Indonesia	132 nurses	SDKI, SLKI, SIKI	Documentation performance improved in the intervention group (87.05) compared with the control group (45.95). The implementation of the 3S framework improved nursing documentation performance.
4.	(Somantri et al., 2021)	Cross-sectional	To analyze the relationship between demographic characteristics and implementation of nursing diagnoses.	Indonesia	132 nurses	NANDA-I	Nearly half of nurses (48.49%) did not use standardized nursing diagnoses. Higher educational attainment was significantly associated with greater diagnostic accuracy ($p = 0.006$).
5.	(Anggariswa et al., 2024)	Retrospective	To describe the implementation of SDKI-based nursing diagnosis documentation	Indonesia	225 patient medical records	SDKI	Nursing diagnosis documentation was categorized as moderate (54.7%). Limited integration between nursing assessments and diagnoses was identified, which may affect the effectiveness of

							nursing interventions.
6.	(Ameel et al., 2020)	Qualitative	To identify nursing intervention documented in free-text using NIC	Finland	79 medical records	NIC	The majority of documented nursing interventions (61 interventions) were consistent with NIC.
7.	(Sulistyawati & Susmiati, 2020)	Cross-sectional	To analyze the relationship between 3S implementation and the quality of nursing documentation	Indonesia	82 nurses	SDKI, SLKI, SIKI	A significant association was found between implementation and the quality of nursing documentation (p = 0.0001). The implementation of 3S supported consistency in documentation content and workflow and strengthened its legal aspects.
8.	(Laukvik et al., 2024)	Qualitative	To explore nurses' experiences of nursing documentation using SNL.	Norway	14 nurses	ICNP, OMAHA System, NANDA	SNL supported nurses' critical thinking, ethical awareness, and knowledge transfer among nurses.
9.	(C. Dos Santos et al., 2024)	Mixed-method	To describe challenges and recommendations related to SNL implementation in Europe.	14 European countries	17 ACENDIO members and 147 panel participants who were nurses.	Not specified	SNL can improve nursing documentation and increase the visibility of nursing practice; however, its implementation remains limited.
10.	(Ojo Olaogun, 2023)	Cross-sectional	To assess the use of and challenges associated with SNL in Nigeria	Nigeria	427 nurses	Not specified	The use of SNL in nursing documentation was moderate (50%), with fluctuations in documentation quality observed over the study period.

Table 3. Synthesis of Findings

N	Major Finding	Identified Items	(De Groot et al., 2020)	(Pranatha & Nugraha, 2023)	(Mahfud et al., 2025)	(Somantri et al., 2021)	(Anggari swa et al., 2024)	(Ameel et al., 2020)	(Sulistyawati & Susmiati, 2020)	(Laukvik et al., 2024)	(C. Dos Santos et al., 2024)	(Ojo & Olaogun, 2023)
1.	Improved Documentation Quality	Improved accuracy and readability	✓	✓					✓	✓	✓	✓
		More accurate nursing diagnoses and interventions	✓	✓			✓	✓	✓			✓

2.	Implementa tion Barriers	EHR systems do not adequately support SNL	✓			✓		✓	✓	✓
		Nurses' limited familiarity with SNL		✓	✓	✓		✓		✓
		Lack of Standardized documentation formats	✓			✓		✓	✓	✓
3.	Role of Training and Supervision	Training improves nurses' understanding of SNL		✓	✓		✓	✓	✓	✓
		Nursing unit manager supervision supports SNL implementation		✓	✓		✓			
4.	Nurse-Related Factors	Nurses' educational level influences SNL utilization			✓	✓				
		Nurses' perceptions influence SNL utilization			✓	✓				

DISCUSSION

The findings of this review suggest that the implementation of Standardized Nursing Language (SNL) improves nursing documentation; however, its benefits depend not only on the availability of standardized terminology but also on its integration into nursing workflows and the organizational and technological context in which it is implemented. The findings indicate that SNL adoption represents a behavioral and organizational change rather than a purely technical intervention.

Maintaining consistent adherence to documentation standards remains a challenge for nurses (Yuwanto et al., 2023). Variations in nurses' competencies frequently lead to inconsistencies in documentation accuracy. Nurses' perceptions and understanding of documentation practices influence the quality of recorded data, while accurate documentation of nursing interventions enables proper evaluation of patient outcomes and strengthens service quality (Yanti et al., 2019). Insufficient knowledge may negatively influence nurses' attitudes towards documentation, resulting in suboptimal documentation practices and reduced quality of nursing services (Sulistiyani et al., 2024). Knowledge levels are also influenced by educational background; nurses with higher educational attainment tend to possess a better understanding of SNL due to greater exposure to information and learning opportunities (Herwawan et al., 2023).

Wagner et al. (2025) found that both registered nurses and nursing students identified insufficient allocated time, the absence of a clear administrative mandate, and perceived

financial constraints as the principal barriers to incorporating SNL into documentation systems, reflecting a widespread belief that healthcare institutions lack the resources to upgrade their systems, a belief that is not always accurate. Similarly, Enebeli et al. (2022), highlighted nurses' lived experiences in the utilization of SNL for nursing documentation in Nigeria. Taken together, these findings suggest that implementation barriers arise from the interaction between individual competency and organizational conditions, rather than being attributable solely to knowledge gaps. Workload, unclear institutional policies, limited resources, and insufficient managerial support may therefore constrain SNL adoption even when standardized terminology is formally available. Thus, addressing SNL implementation requires efforts that extend beyond improving individual nurses' knowledge and skills to include organizational and managerial support. This may also explain differences across the included studies, as the availability or use of SNL did not consistently result in complete or high quality documentation. Therefore, SNL implementation should not be evaluated solely by its availability, but also by whether it is routinely used and meaningfully integrated into clinical practice.

In addition to individual and organizational factors, the technological environment in which SNL is implemented may substantially influence its adoption and sustainability. Variations in electronic health record (EHR) systems that lack integration with standardized terminology can further hinder SNL utilization. Effective and secure EHR systems require standardized formats to ensure structured data that can be reused for clinical and organizational purposes (Ebberts et al., 2022). Emmanuel et al. (2024) reported that the utilization of NIC and NOC terminologies in nursing documentation was lower than that of NANDA, which may be attributed to nurses' familiarity and comfort with certain terminology systems developed over time. This suggests that technology related barriers are not limited to the absence of SNL within an EHR but also involve system usability and the extent to which standardized terminology fits existing clinical workflows. SNL cannot function optimally when EHR architecture relies primarily on unstructured free-text documentation rather than structured and codified data entry (Ebberts et al., 2022). Furthermore, Cho et al. (2023) demonstrated that standardized nursing terminologies contributed to achieving semantic interoperability across multiple EHR systems and supported the automated tracking of nursing activities and patient outcomes. Therefore, EHR design should be considered an implementation strategy rather than merely a technical infrastructure. Systems that incorporate structured SNL terminology into routine workflows may enable more consistent documentation while also supporting interoperability, clinical decision support, and secondary use of nursing data. At the policy level, these findings highlight the importance of aligning SNL implementation with digital health policies and interoperability standards so that standardized terminology can be effectively integrated into electronic documentation systems.

The context in which SNL is implemented may also shape the nature and magnitude of these barriers. The findings of this review indicate that implementation challenges occur across different healthcare settings, although their underlying factors may vary according to technological, educational, and organizational contexts. In technologically advanced healthcare systems, challenges may include the integration of standardized nursing terminologies into existing and potentially fragmented EHR infrastructures. For Example, Cho et al. (2023) demonstrated the use of standardized nursing terminologies across hospitals with different EHR systems in South Korea, highlighting the importance of interoperability when integrating SNL into heterogeneous digital environments. In contrast, implementation in lower resource settings may be influenced by additional challenges related to digital infrastructure and workforce readiness. Enebeli et al. (2022), explored SNL utilization among nurses in Nigeria, while Gelchu et al. (2025) found that readiness for EHR implementation in Ethiopia

was associated with age, computer, ownership, computer skills and literacy, knowledge of EHR systems, and positive attitudes toward EHR adoption. Taken together, these findings suggest that implementation barriers are context dependent and may occur at different levels across healthcare systems. However, these differences should not be interpreted simply as distinction between developed and developing countries, as both settings may face substantial but different implementation challenges. Implementation strategies should be adapted to the specific technological, educational, human resource, and organizational readiness of each setting.

Given the multifaceted nature of these barriers, successful SNL implementation requires coordinated strategies at the individual, technological, and organizational levels. Adubi et al. (2018) demonstrated that the implementation of SNL, supported by continuing education programs and adequate resources, can improve both nursing documentation and quality of care. Supervision, as an essential function of nursing management, ensures that nurses perform activities aligned with organizational goals, including the implementation of SNL in documentation practices (Atashi et al., 2024). Consistent with findings by Sérgio et al. (2023) effective supervision significantly influences nurses' performance in hospital settings by strengthening commitment and engagement in delivering nursing care. From a nursing management perspective, nurse managers should be actively involved in implementation planning, competency, development, routine monitoring, and feedback to ensure that SNL use sustained in daily practice.

Organizational readiness is a decisive factor in determining whether SNL and related EHR innovations can be successfully adopted and sustained. Matthews & Burgess (2025), identified governance, leadership and culture, end-user involvement, training, resourcing, and workflow design as interconnected organizational factors influencing the success of digital health implementation. These findings suggest that strengthening SNL implementation requires not only individual nurse training but also organizational preparedness, including leadership engagement, clear governance, adequate resources, end-user involvement, workflow alignment, and infrastructure readiness. Therefore, healthcare organizations should assess and strengthen their readiness before implementing or scaling up SNL-based documentation systems to ensure that the innovation can be integrated into routine practices and sustained over time. Such readiness assessment should consider staff competency, system usability, leadership commitment, resource availability, and alignment between SNL and organizational documentation policies.

This review has several limitations. The search was limited to four electronic databases and studies published in English or Indonesian, which may have resulted in the omission of relevant studies indexed in other databases or published in other languages. In addition, heterogeneity in study designs, SNL systems, healthcare settings, and outcome measures limited direct comparison across studies. As a scoping review, no formal critical appraisal or risk of bias assessment was conducted, therefore, the methodological quality and strength of available evidence could not be systematically evaluated.

Overall, these findings indicate that the implementation of Standardized Nursing Language (SNL) in nursing documentation contributes to more accurate, systematic, and accountable documentation, ultimately improving the quality of nursing care services. However, successful implementation is a multilevel process that extends beyond nurses' individual knowledge and competencies and requires alignment between human resources, EHR infrastructure, organizational readiness, regulatory support and managerial commitment. The findings further suggest that implementation strategies should be context-sensitive, recognizing that barriers may differ according to the technological maturity, resources, and organizational characteristics of healthcare systems. Future research should apply

implementation science frameworks to examine how individual, organizational, and technological factors interact to influence SNL adoption and sustainability.

CONCLUSION

This review identified that the implementation of Standardized Nursing Language (SNL) in nursing documentation improves documentation quality by supporting greater accuracy, completeness, consistency, and systematic recording of nursing care. The principal contribution of this review is the synthesis of evidence showing that successful SNL implementation requires alignment between standardized terminology, health information system, readiness, organizational support, and nurses' competencies. In practice, healthcare organizations should integrate SNL into routine documentation systems and support its sustained use through appropriate organizational and managerial support, education, training, and supervision. Future research should apply implementation science frameworks to systematically examine context specific barriers and facilitators and develop effective strategies for sustainable SNL implementation across diverse healthcare systems.

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CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest related to the conduct and publication of this research.

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