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A Feedback Study Among Students and Faculty About CliniTrack: A Novel Clinical Audit System for Continuous Monitoring and Improvement of Clinical Training

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Abstract

Background and objective

Clinical audit systems have become integral to competency-based dental education by enabling structured monitoring of clinical performance, documentation quality, and educational outcomes. CliniTrack is a digital clinical audit system designed to objectively monitor postgraduate (PG) clinical activities using Hospital Information Management System (HIMS)-generated data. This study aimed to evaluate the perceptions of PG students and faculty members regarding the usability, educational impact, and clinical integration of CliniTrack.

Materials and methods

A descriptive cross-sectional questionnaire-based study was conducted using a self-constructed questionnaire with 22 questions, among 114 participants, comprising 79 PG students and 35 faculty members, at the School of Dental Sciences, KVV Deemed University (KVVDU), Karad. Participants with prior exposure to CliniTrack completed a structured questionnaire assessing three domains: usability, educational impact, and clinical integration using a 5-point Likert scale. Descriptive statistics were used to summarize the responses, which are presented as frequencies and percentages.

Results

Faculty members demonstrated consistently higher levels of agreement than PG students across all evaluated domains. Educational impact received the highest level of acceptance, with 88.6% (n = 31/35) of faculty members and 65.8% (n = 52/79) of PG students agreeing that case discussions improved diagnosis and treatment planning. Monitoring of clinical work (97.1% (n = 34/35)), multidimensional faculty assessment (91.4% (n = 32/35)), and feedback relevance (88.6% (n = 31/35)) were highly appreciated by faculty members. Among PG students, improved documentation quality (65.8% (n = 52/79)), case discussions (65.8% (n = 52/79)), and assessment by multiple faculty members (59.5% (n = 47/79)) received the greatest support. The lowest level of agreement among PG students was observed for the statement that the time invested in CliniTrack was justified (29.1% (n = 23/79)), indicating concerns regarding workflow efficiency despite recognition of the system's educational benefits.

Conclusions

CliniTrack was perceived as an effective digital clinical audit system that enhances case-based learning, clinical documentation, performance monitoring, and objective assessment in PG dental education. While faculty members demonstrated strong acceptance across all evaluated domains, PG students identified opportunities to improve usability by reducing the time burden associated with the audit process. Optimizing workflow may further strengthen the integration and acceptability of digital clinical audit systems in competency-based dental training.

Categories: Medical Education, Healthcare Technology, Dentistry
Keywords: clinical audit system, • curriculum development in health professions institutions, dental education, indian dentist, postgraduate dental students

Introduction

Clinical audit systems are increasingly recognized as essential tools in competency-based dental education, supporting continuous quality improvement, structured clinical training, and objective performance assessment of postgraduate (PG) students [1,2]. In modern academic institutions, the emphasis has shifted

from traditional case completion-based evaluation to outcome-oriented and data-driven monitoring systems that promote accountability, transparency, and measurable clinical productivity [1-4]. With the integration of Hospital Information Management Systems (HIMS) into healthcare institutions, digital audit platforms have emerged as effective mechanisms for real-time documentation of clinical workload, procedural efficiency, and academic output. These systems facilitate systematic tracking of patient care activities, time management, and institutional revenue generation, thereby enabling comprehensive assessment of clinical performance in PG dental training programs [2,5,6].

CliniTrack is one such structured clinical audit system implemented to record the weekly clinical activities of PG students. It enables standardized documentation of case volume, procedural time requirements, and associated institutional revenue through HIMS-generated data [3,6,7]. By providing objective performance indicators, CliniTrack promotes self-assessment among PG students and supports faculty members in monitoring clinical progress using an evidence-based approach [4,7,8]. Despite the growing adoption of digital clinical audit tools in dental education, there is limited published evidence evaluating their usability, educational value, and acceptability from both learner and faculty perspectives [7,9,10]. Understanding end-user feedback is essential for assessing the effectiveness of such systems and identifying opportunities for improvement to enhance academic utility and clinical integration [2,3,11].

CliniTrack was introduced as a clinical audit system in the institution to facilitate the systematic monitoring of clinical training activities and support continuous quality improvement in PG dental education. The system was implemented to provide a structured approach to clinical audit, feedback, and the identification of areas requiring improvement in the clinical training process. Following its implementation, the present study was undertaken to assess the perceptions and acceptability of the system among PG students and faculty members involved in clinical training. The study focused on user feedback and the perceived educational relevance of the audit system rather than on a direct comparison with other software platforms.

Materials And Methods

Study design

This descriptive, cross-sectional, questionnaire-based study was conducted to evaluate the perceptions of PG students and faculty members regarding the usability, educational impact, and clinical integration of the CliniTrack clinical audit system.

Study setting and study period

The study was conducted at the School of Dental Sciences, KVV Deemed University (KVVDU), Karad, Maharashtra, India, where the CliniTrack clinical audit system is routinely implemented as an integral component of PG clinical monitoring and academic evaluation. Data collection was carried out during the study period from June 25, 2026 to August 25, 2026.

Study population

The study population comprised PG dental students and faculty members actively involved in PG clinical training, supervision, and academic activities, and who had prior exposure to the CliniTrack clinical audit system. The departments involved in the study included the Department of Oral and Maxillofacial Surgery, Department of Orthodontics and Dentofacial Orthopedics, Department of Periodontology, Department of Pediatric and Preventive Dentistry, Department of Prosthodontics and Crown and Bridge, and Department of Conservative Dentistry and Endodontics.

Inclusion and exclusion criteria

Inclusion Criteria

(i) PG students from all years of study who had participated in CliniTrack clinical audit sessions. (ii) Faculty members involved in PG teaching and clinical supervision who had experience using the CliniTrack system. (iii) Participants who provided informed consent and voluntarily agreed to participate.

Exclusion Criteria

(i) Individuals who had not attended any CliniTrack sessions. (ii) Participants who declined to provide informed consent. (iii) Incomplete or duplicate questionnaire responses.

Confounding factors

Potential confounding factors include the year of MDS training, faculty designation, duration and frequency of CliniTrack exposure, and clinical workload. Previous experience with clinical audits and differences in case exposure may influence participants' feedback. Social desirability bias and perceived evaluation pressure due to faculty-student hierarchy may also affect responses.

Potential confounding factors were addressed by collecting participant demographic and professional characteristics and considering differences in CliniTrack exposure during interpretation of findings. Anonymous feedback collection was used to minimize social desirability bias and evaluation pressure.

Pilot study

A pilot study was conducted before the main study to assess the clarity and comprehensibility of the questionnaire and the feasibility of the data collection process. The pilot study included six participants (one from each department) with characteristics similar to those of the intended study population. Feedback obtained during the pilot phase was used to modify the questionnaire. The pilot participants were included in the final study.

Sample size and sampling technique

A total of 114 participants were included in the study, comprising 79 PG students (69.3%) and 35 faculty members (30.7%). All eligible and willing participants were recruited using a convenience sampling technique during the study period.

$$n = \frac{Z^2 pq}{L^2}$$

where,

$Z = 1.96$ Type I error with 5% level of significance

$p = 60\% = 0.60$ Assuming 60 % of PG & Faculty have acceptance about clinitrack audit system

$q = 100 - p = 40\% = 0.40$

$L = 9\% = 0.09$ Allowable error 9%

$$n = \frac{(1.96)^2 \times 0.60 \times 0.40}{(0.09)^2}$$

$$n = \frac{3.8416 \times 0.60 \times 0.40}{0.0081}$$

$$n = \frac{0.921984}{0.0081}$$

$$n = 113.82$$

$$n \approx 114$$

Among the PG students, 29 (36.7%) were first-year, 27 (34.2%) were second-year, and 23 (29.1%) were third-year students. Among faculty members, eight (22.9%) were professors, 14 (40.0%) were associate professors, and 13 (37.1%) were assistant professors.

Exposure to the CliniTrack clinical audit system

All participants had prior experience with the CliniTrack clinical audit system before completing the questionnaire. Among the PG students, 63 (79.7%) had attended more than 20 (more than 50%) CliniTrack sessions, while 22 (62.9%) faculty members had attended more than 20 (more than 50%) sessions.

Questionnaire development and validation

Data were collected using a structured questionnaire specifically developed to assess user perceptions of the CliniTrack clinical audit system. The questionnaire was designed after reviewing relevant literature on clinical audit systems, PG dental education, and feedback assessment. The questionnaire evaluated three principal domains: usability, educational impact, and clinical integration. The draft questionnaire was reviewed by subject experts for content validity and clarity before administration. A pilot study was conducted on a small group of participants to assess comprehensibility and feasibility. Necessary modifications were incorporated based on feedback obtained during the pilot phase. The final questionnaire

consisted of statements rated on a 5-point Likert scale: strongly agree, agree, neutral, disagree, and strongly disagree, along with selected closed-ended questions assessing participant characteristics and prior exposure to the CliniTrack system.

Data collection procedure

The questionnaire was administered electronically using Google Forms. Participants accessed the survey through a quick response (QR) code or web link provided by the investigators. Responses were collected anonymously to maintain participant confidentiality and minimize response bias. Before completing the questionnaire, participants received standardized instructions regarding the objectives of the study and the procedure for completing the survey. Electronic informed consent was obtained from all participants before questionnaire completion.

Variables assessed

I. Usability

The usability domain assessed the usefulness of weekly review of clinical work, revision of previously treated cases, quality of clinical documentation, monitoring of pending and completed cases, and the perceived usefulness of the time invested in using the system.

II. Educational Impact

The educational impact domain evaluated the influence of CliniTrack on case discussions, relevance of faculty feedback, panel discussions, peer-assisted learning, enhancement of clinical reasoning, and development of presentation skills.

III. Clinical Integration

The clinical integration domain assessed participants' perceptions regarding patient follow-up, assessment of the quality of clinical work, transparency and accountability in clinical assessment, and the overall acceptance of the CliniTrack clinical audit system as a component of PG dental training.

Ethical considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of KVV Deemed University, Karad (approval number: 029/2026-2027). The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Participation was voluntary, and confidentiality of all responses was maintained throughout the study.

Statistical analysis

Data obtained from the questionnaire were entered into Microsoft Excel and analyzed using IBM SPSS Statistics version 23.0 (IBM Corp., Armonk, NY, USA). For descriptive analysis, responses to the five-point Likert scale were grouped into three categories: agreement (strongly agree + agree), neutral, and disagreement (strongly disagree + disagree). Frequencies and percentages were calculated for each response category. Categorical variables were expressed as N (%).

The responses were analyzed separately for postgraduate students and faculty members to facilitate comparison between the two participant groups. The three predefined domains - usability, educational impact, and clinical integration - were analyzed independently based on the respective questionnaire items. For each questionnaire item, the number and proportion of participants reporting agreement, neutrality, and disagreement were calculated. The findings were summarized using frequencies and percentages, with all proportions reported in the N (%) format.

The internal consistency of the questionnaire was assessed using Cronbach's alpha for the usability, educational impact, and clinical integration domains, as well as for the questionnaire as a whole. Cronbach's alpha values were used to assess the internal consistency and reliability of the questionnaire. Descriptive findings were presented using frequencies and percentages, and comparisons between postgraduate students and faculty members were interpreted in relation to the three predefined domains of the CliniTrack clinical audit system.

Results

A total of 114 participants responded to the feedback survey on the CliniTrack Clinical Audit System, including 79 PG students (69.3%) and 35 faculty members (30.7%). Among the PG students, 29 (36.7%) were first-year, 27 (34.2%) were second-year, and 23 (29.1%) were third-year PG students. Among the faculty respondents, eight (22.9%) were Professors, 14 (40.0%) were Associate Professors, and 13 (37.1%) were Assistant Professors. The majority of participants had substantial exposure to the audit system, with 63

(79.7%) of PG students and 22 (62.9%) of faculty members reporting attendance at more than 20 CliniTrack sessions, as shown in Table 1.

Variable	Category	PG students, n (%)	Faculty, n (%)
Designation/year	I MDS	29 (36.7)	–
	II MDS	27 (34.2)	–
	III MDS	23 (29.1)	–
	Professor	–	8 (22.9)
	Associate Professor	–	14 (40.0)
	Assistant Professor	–	13 (37.1)
Number of CliniTrack sessions attended	< 5	2 (2.5)	5 (14.3)
	5–10	7 (8.9)	3 (8.6)
	11–20	7 (8.9)	5 (14.3)
	> 20	63 (79.7)	22 (62.9)

TABLE 1: Distribution of postgraduate students and faculty members according to academic year/designation and number of CliniTrack clinical audit sessions attended (N = 114)

The usability of CliniTrack was evaluated through participants' perceptions regarding weekly clinical review, case revision, monitoring of clinical work, documentation, and the overall utility of the time invested in the system. Among PG students, 41 (51.9%) agreed that weekly review of clinical work was a useful component of PG training, while 23 (29.1%) disagreed and 15 (19.0%) remained neutral. Revisiting previously treated cases was considered educationally valuable by 46 (58.2%) students, whereas 19 (24.1%) disagreed and 14 (17.7%) remained neutral. Similarly, 41 (51.9%) students agreed that monitoring pending and completed cases influenced their clinical work patterns. Faculty responses demonstrated higher levels of acceptance. Weekly review of clinical work was considered useful by 19 (54.3%) faculty members, while 28 (80.0%) agreed that revisiting previously treated cases enhanced learning.

Nearly all faculty respondents, 34 (97.1%), agreed that monitoring pending and completed cases positively influenced their clinical work patterns. The review of clinical records was identified as one of the major strengths of CliniTrack. Agreement regarding improvement in the quality of clinical documentation was observed among 52 (65.8%) PG students and 24 (68.6%) faculty members. Regarding the overall utility of the system, 23 (29.1%) PG students agreed that the time invested in CliniTrack was justified by its outcomes, compared with 27 (77.1%) faculty members. This finding indicates that although the educational and clinical benefits of the system were recognized by both groups, PG students demonstrated lower acceptance of the time investment associated with CliniTrack, suggesting a greater perceived burden in terms of time and effort as depicted in Table 2.

Item	PG agreement, n (%)	Faculty agreement, n (%)	Overall interpretation
Weekly review of clinical work is useful	41 (51.9)	19 (54.3)	Moderate usability
Revisiting treated cases provides educational value	46 (58.2)	28 (80.0)	Good usability
Monitoring pending and completed cases influences clinical work patterns	41 (51.9)	34 (97.1)	Excellent usability
Review of records improves quality of clinical documentation	52 (65.8)	24 (68.6)	Good usability
Time invested in CliniTrack is justified by outcomes	23 (29.1)	27 (77.1)	Scope for improvement

TABLE 2: Perceptions of postgraduate students and faculty members regarding the usability of the CliniTrack clinical audit system (N = 114)

The educational impact of CliniTrack was assessed by evaluating participants' perceptions regarding case discussions, feedback, panel discussions, peer-assisted learning, and presentation skills. Case discussions were rated as one of the most beneficial educational components of CliniTrack. Among PG students, 52 (65.8%) agreed that discussion of cases improved their understanding of diagnosis and treatment planning. Faculty members demonstrated an even higher level of agreement, with 31 (88.6%) endorsing this statement.

Feedback generated during the audit was considered relevant to clinical training by 42 (53.2%) PG students and 31 (88.6%) faculty members. Panel discussions were regarded as valuable learning opportunities by 46 (58.2%) PG students and 28 (80.0%) faculty respondents. Peer-assisted learning emerged as another important advantage of the system. Observation of cases presented by fellow PG students contributed to learning according to 45 (57.0%) PG respondents. Similarly, 31 (88.6%) faculty members believed that presentations and discussions promoted learning beyond routine clinical postings.

Presentation before faculty members positively influenced the preparation and organization of clinical work in 43 (54.4%) PG students, indicating that the audit system may encourage students to maintain updated records and prepare systematically for clinical discussions. The clinical integration of CliniTrack was assessed based on patient follow-up, assessment of clinical work, transparency, accountability, and acceptance of the system as a component of PG training.

Regular review of cases improved attention toward patient follow-up according to 42 (53.2%) PG students. Among faculty members, 13 (37.1%) agreed with this statement, whereas a considerable proportion remained neutral, suggesting variability in perceptions regarding the direct influence of clinical audits on follow-up practices. The current format of CliniTrack allowed meaningful assessment of the quality of clinical work according to 37 (46.8%) PG students and 26 (74.3%) faculty members. Assessment by multiple faculty members was considered beneficial by 47 (59.5%) PG students and 32 (91.4%) faculty members, indicating strong support for multidimensional evaluation.

Transparency in clinical assessment was perceived positively by 26 (32.9%) PG students and 31 (88.6%) faculty respondents. Similarly, 27 (77.1%) faculty members supported the continuation of CliniTrack as a component of PG clinical training, whereas 25 (31.6%) PG students expressed support and 27 (34.2%) disagreed. The distribution of responses regarding clinical integration and acceptance of the CliniTrack clinical audit system is presented in Table 3.

Item	PG agreement, n (%)	Faculty agreement, n (%)	Overall interpretation
Regular review influences patient follow-up	42 (53.2)	13 (37.1)	Moderate integration
Current format allows meaningful assessment of clinical work	37 (46.8)	26 (74.3)	Moderate to good integration
Assessment by multiple faculty members is beneficial	47 (59.5)	32 (91.4)	Strong integration
System promotes transparency in clinical assessment	26 (32.9)	31 (88.6)	Variable perceptions
CliniTrack should continue as part of postgraduate training	25 (31.6)	27 (77.1)	Overall positive acceptance

TABLE 3: Perceptions of postgraduate students and faculty members regarding the clinical integration and acceptance of the CliniTrack clinical audit system (N = 114)

Data are presented as n (%), with percentages representing participants who selected "strongly agree" or "agree" on the 5-point Likert scale

Discussion

Digital platforms are increasingly being used in dental education to facilitate clinical record management, monitor students' clinical performance, and support continuous quality improvement. Various clinical management and educational platforms are available to support patient documentation, appointment scheduling, treatment planning, and clinical competency tracking. However, their features, accessibility, and suitability for undergraduate and PG dental training may vary depending on institutional requirements [1,2,6]. CliniTrack was implemented in our institution as a clinical audit and monitoring system to facilitate the systematic assessment of clinical training activities and support continuous feedback for students and faculty. Its application provides an opportunity to evaluate its perceived usefulness, usability, and acceptability in the institutional dental education setting.

The present study evaluated the feedback of PG dental students and faculty members regarding the CliniTrack clinical audit system implemented for structured monitoring of clinical training. Digital audit systems such as CliniTrack are increasingly being incorporated into dental education to strengthen competency-based learning, ensure systematic documentation, and support transparent academic evaluation [3,5]. In this context, user perception becomes a key determinant of successful adoption and long-term sustainability.

A notable observation in this study was the difference in perception between faculty members and PG students. Faculty members demonstrated a more positive outlook, which may be attributed to their role in academic supervision and assessment, where such systems provide structured and consolidated information for monitoring student progress. In contrast, PG students interact with the system as direct users during clinical postings, and therefore their perception is more closely influenced by workflow integration, ease of use, and perceived additional workload. This difference highlights the importance of considering role-based expectations when implementing digital academic tools in clinical training environments.

The findings also reflect the broader academic value of structured audit systems in reinforcing systematic clinical engagement [2,7]. CliniTrack appears to support regular academic interactions, encouraging students to maintain updated clinical records and participate in case-based discussions. This aligns with competency-based dental education models, where continuous formative assessment and reflective learning are essential components. Previous studies on clinical audit-based teaching models have similarly reported improved academic discipline and enhanced clinical decision-making skills among PG trainees [4-7].

From an institutional perspective, CliniTrack contributes to standardization of clinical monitoring and assessment practices. By providing a unified framework for documentation and review, it reduces variability in evaluation and enhances consistency across faculty members [2,4,7]. Such standardization is particularly important in PG programs where multiple supervisors are involved in assessing clinical competence [3,5,8]. The system also strengthens academic accountability by ensuring that clinical activities are systematically recorded and reviewed at regular intervals [4,8].

However, the successful integration of such systems depends not only on their academic value but also on their usability and adaptability within routine clinical workflows. Digital platforms in healthcare education are often associated with challenges such as increased documentation requirements, time constraints, and user fatigue [1,7,9]. These factors can influence student engagement and may affect overall acceptance despite acknowledged educational benefits [10,11]. Therefore, continuous refinement of interface design

and simplification of data entry processes are essential to improve user experience.

Beyond monitoring clinical productivity, structured clinical audits can provide a continuous feedback mechanism between PG students and faculty [6,10]. Regular review of clinical activities may help PG students identify gaps in case completion, documentation, treatment planning, and time management, while enabling faculty members to provide timely guidance and targeted supervision [12,13]. Thus, clinical audit can function not only as an administrative monitoring tool but also as an educational process that supports reflection, accountability, and continuous improvement in PG clinical training.

However, the effectiveness of a digital audit system depends largely on its acceptance and perceived usefulness among its end users. Evaluation of both PG and faculty perspectives is therefore important to determine whether the system is practical, educationally relevant, and supportive of clinical learning and supervision. Assessing these perceptions may also help identify areas requiring modification and provide evidence for further integration of structured digital auditing into routine PG dental education [5,14].

Additionally, periodic feedback from both students and faculty is crucial for iterative improvement of the system. Incorporating user suggestions can help in optimizing workflow efficiency and ensuring that the system remains aligned with academic requirements without becoming burdensome [15,16]. Training sessions and orientation programs may further enhance familiarity and reduce resistance among new users. Overall, CliniTrack serves as a valuable academic tool that supports structured clinical training, enhances documentation practices, and promotes standardized evaluation in PG dental education [4,7,17]. Its effectiveness can be further strengthened by addressing usability concerns and ensuring seamless integration into daily clinical practice, thereby improving both student engagement and institutional efficiency.

Strengths and limitations

An important strength of the present study is the inclusion of both PG students' and faculty members' perspectives on the newly implemented CliniTrack clinical audit system. This approach provided insights into its perceived acceptability, educational relevance, and practical challenges, particularly the concerns regarding the time required for its use. However, the study was conducted at a single institution, which may limit the generalizability of the findings. Department-wise comparisons were intentionally avoided to preserve participant confidentiality and anonymity, as reporting department-specific responses in a single-institution study could potentially reveal participants' identities. Furthermore, the study primarily assessed subjective perceptions and did not establish objective improvements in clinical performance or educational outcomes. Future multicenter studies involving larger and more diverse populations could facilitate broader comparisons and provide stronger evidence regarding the usefulness and effectiveness of the clinical audit system in PG dental education.

Future scope

Future studies may include multi-institutional evaluations to enhance external validity and compare the implementation of CliniTrack across different academic settings. Longitudinal studies can be conducted to assess changes in user perception over time and evaluate the sustained impact of the system on clinical training outcomes. Integration of objective performance metrics such as case completion rates, diagnostic accuracy, and academic scores may provide deeper insights into its educational effectiveness. Further refinement of the system based on user feedback, including improvements in interface design and workflow optimization, may enhance usability and acceptance among PG students.

Conclusions

CliniTrack clinical audit system is an effective digital platform for structured monitoring of PG dental clinical training. The interpretation of the descriptive findings is generally reasonable, and the proposed improvements to workflow efficiency follow logically from the reported student feedback. However, the conclusions should distinguish clearly between perceived educational benefits and demonstrated improvements in clinical training. The system is well accepted by faculty members and moderately accepted by PG students, with strong recognition of its educational value in enhancing case discussions, documentation practices, and clinical assessment. Faculty perception indicates high utility in academic monitoring and standardization of evaluation processes. However, variability in student acceptance highlights the need for further optimization of usability and workflow integration. Overall, CliniTrack contributes positively to competency-based dental education by promoting systematic clinical documentation, reflective learning, and transparent academic assessment.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Madhura Mahajan, N.D. Shashikiran, Shivsagar Tewary

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Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. Institutional Ethics Committee, Krishna Vishwa Vidyapeeth (Deemed to be University), Karad issued approval 029/2026-2027. **Animal subjects:** All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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