

The Relationship Between Professional Commitment and Perceived Clinical Competence Among Undergraduate Operating Room and Anesthesia Technology Students: A Cross-Sectional Correlational Study

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Abstract

Introduction:

Professional commitment and clinical competence are important components in the development of professional identity and competence among medical sciences students. Professional commitment refers to an individual's level of attachment to and dedication to their profession, whereas perceived clinical competence reflects an individual's assessment of their ability to apply knowledge, practical skills, professional judgment, and ethical principles in clinical situations. Given the limited evidence regarding the simultaneous relationship between these two constructs among operating room and anesthesia technology students in Iran, this study aimed to investigate the relationship between professional commitment and perceived clinical competence among these students.

Methods

This cross-sectional correlational study was conducted in 2025 at Rafsanjan University of Medical Sciences, Iran. The study population consisted of eligible undergraduate students majoring in Operating Room Technology and Anesthesia Technology, and 150 students were recruited using a census sampling method. Inclusion criteria were enrollment in the second semester or beyond, no history of transferring from another university, no prior professional work experience in the operating room, and willingness to participate in the study. Data were collected using a demographic information questionnaire, an 18-item professional commitment questionnaire based on Meyer and Allen's three-component model, and a 45-item perceived clinical competence questionnaire. Data were analyzed using SPSS version 26 with descriptive statistics, Pearson's correlation coefficient, independent-samples t-test, analysis of variance, and multiple linear regression analysis. The significance level was set at 0.05.

Results

The mean professional commitment score was 61.3 ± 9.8 , and the mean perceived clinical competence score was 168.7 ± 24.3 . A significant positive correlation was found between overall professional commitment and perceived clinical competence ($r = 0.63, p < 0.001$). Affective commitment ($r = 0.58, p < 0.001$) and normative commitment ($r = 0.51, p = 0.002$) were also significantly and positively correlated with perceived clinical competence, whereas the correlation between continuance commitment and perceived clinical competence was not statistically significant ($r = 0.15, p = 0.062$). In addition, grade point average (GPA) ($r = 0.41, p < 0.001$) and level of interest in the field of study ($r = 0.49, p < 0.001$) were significantly and positively associated with perceived clinical competence. In the multiple linear regression analysis, overall professional commitment ($\beta = 0.48, p < 0.001$), interest in the field of study ($\beta = 0.22, p = 0.003$), and GPA ($\beta = 0.18, p = 0.012$) were independently associated with perceived clinical competence scores. The model explained 49.3% of the variance in perceived clinical competence scores ($R^2 = 0.493$, adjusted $R^2 = 0.474, p < 0.001$).

Conclusion

The findings indicated that higher professional commitment was associated with higher levels of perceived clinical competence among undergraduate Operating Room Technology and Anesthesia Technology students. Greater interest in the field of study and higher GPA were also associated with higher perceived clinical competence. Given the cross-sectional design of the study and the use of self-report instruments, these findings demonstrate associations between the variables and do not permit causal inferences. Attention to professional commitment and academic motivation, along with the development of supportive educational and clinical environments, may be considered in educational planning for these students.

Introduction

In complex and high-risk clinical environments such as the operating room, the quality of care directly depends on two critical factors: the professional commitment of healthcare personnel and their clinical competence. Professional commitment, defined as a psychological state and a deep commitment to a particular profession (1), extends beyond an individual characteristic and is recognized as one of the key determinants of healthcare service quality (2). This concept, which encompasses three primary dimensions— affective commitment (emotional attachment), continuance commitment (the perceived costs of leaving), and normative commitment (a sense of obligation)— provides a foundation for fostering mutual trust among healthcare professionals, patients, and society (1, 3). Studies have shown that individuals with higher levels of professional commitment are less likely to leave their jobs and demonstrate greater responsibility in fulfilling their professional duties (4, 5). Recent studies have also indicated that professional commitment among health sciences students is influenced by a combination of individual, educational, and environmental factors, and that strengthening professional identity, providing a supportive educational environment, and promoting self-directed learning may contribute to the development and sustainability of such commitment (6, 7).

Alongside professional commitment, clinical competence refers to the ability to simultaneously apply specialized knowledge, practical skills, professional judgment, and ethical principles to provide safe and effective patient care (8). It is currently regarded as one of the most important indicators influencing the delivery of healthcare services (9, 10). Insufficient clinical competence may compromise the quality of care and lead to adverse consequences for patient safety and satisfaction (9). The assessment of clinical competence, particularly through self-assessment, plays a key role in identifying areas of weakness and planning for future educational needs (10, 11). Recent evidence has also emphasized the importance of self-assessment of clinical competence among students; identifying skill gaps and educational needs can facilitate targeted planning for the development of professional competencies before students fully enter the workforce (12).

In Iran, several studies have examined these two constructs separately. For example, a study by Arab-Khazaei et al. (2020) showed that operating room technologists generally rated their clinical competence

as moderate to good (9). Similarly, a study by Amini et al. (2020) emphasized the need to strengthen nursing students' knowledge and attitudes toward professional commitment (13). However, the relationship between these two key constructs has received limited attention in comprehensive studies, particularly among students in allied health disciplines such as Operating Room Technology and Anesthesia Technology.

The only study that has indirectly examined this relationship is that of Pourkarimi et al. (2018), which confirmed the mediating role of professional commitment in the relationship between professional competence and job performance among educational experts in Tehran (14). Although conducted in a different population, this finding highlights the importance of professional commitment as a bridge between knowledge and skills and their actual application in professional performance.

Furthermore, studies such as that by Golestan et al. (2008) have emphasized the effectiveness of advisory committees in improving nurses' clinical competence (15), whereas the study by Mardani-Homle et al. (2011) evaluated the status of clinical education from the perspective of nursing students (16). In addition, research such as the study by Aghamohammadi et al. (2019) examined faculty members' attitudes toward medical professionalism (17), while the study by Aramesh et al. (2009) introduced an instrument for assessing professionalism in residency programs (18).

At the international level, studies such as that by Wu et al. (2020) have demonstrated that professional commitment is associated with nursing students' ability to provide humanistic care (19). Similarly, Taylor et al. (2020) examined the self-assessment of clinical competence among advanced nursing students (10), while Ken's study (2021) analyzed the relationship between self-care and professional commitment among Turkish nurses (20). These findings highlight the broader international relevance of the relationship between professional commitment and clinical competence.

In Iran, numerous studies have separately investigated professional commitment and clinical competence among different groups of health sciences students and professionals. Nevertheless, evidence regarding the direct relationship between professional commitment and perceived clinical competence, particularly among Operating Room Technology and Anesthesia Technology students in Iran, remains limited. Therefore, examining these two constructs simultaneously may contribute to a better understanding of factors associated with students' professional preparedness and facilitate the development of educational programs tailored to their needs.

Given this knowledge gap and the importance of preparing a committed and competent healthcare workforce, this study was designed to investigate the correlation between professional commitment and perceived clinical competence among undergraduate Operating Room Technology and Anesthesia Technology students at Rafsanjan University of Medical Sciences. The findings of this study may serve as a roadmap for educational policymakers and curriculum planners to simultaneously strengthen these two valuable constructs.

Materials and Methods

Study Design and Participants

The present cross-sectional correlational study was conducted during the 2025 academic year at Rafsanjan University of Medical Sciences, Iran. The study population consisted of all eligible undergraduate students majoring in Operating Room Technology and Anesthesia Technology. Given the limited size of the target population, a census sampling method was employed, and a total of 150 eligible students participated in the study.

The inclusion criteria were: (1) enrollment in the second semester or beyond; (2) no history of transfer from another university; (3) no prior professional work experience in the operating room; and (4) willingness to participate in the study. The exclusion criteria were withdrawal from participation at any stage of the study and failure to complete at least one of the main study questionnaires.

Before data collection, the study objectives and procedures were explained to all participants. After providing informed consent, participants completed the study questionnaires in the educational setting. Participation was voluntary, and all collected data were treated confidentially and analyzed anonymously without recording participants' names or identifying information.

Data Collection Instruments

The data collection instruments included a demographic information questionnaire, the Meyer and Allen Professional Commitment Questionnaire, and the Perceived Clinical Competence Questionnaire.

Demographic Information Questionnaire

The demographic questionnaire collected information on age, sex, marital status, field of study, grade point average (GPA), and level of interest in the field of study.

Meyer and Allen Professional Commitment Questionnaire

To assess students' professional commitment, an 18-item questionnaire based on Meyer and Allen's three-component model was used (1). The questionnaire assesses three dimensions of professional commitment: affective commitment, continuance commitment, and normative commitment. Items were scored on a five-point Likert scale, with the total score ranging from 18 to 90; higher scores indicated higher levels of professional commitment. In the present study, the internal consistency reliability of the instrument was assessed using Cronbach's alpha coefficient and was found to be 0.87. This instrument has also been used in previous studies to assess professional commitment among healthcare professionals and students (1, 21).

Perceived Clinical Competence Questionnaire

To assess students' perceived clinical competence, the 45-item Clinical Competence Questionnaire used in the study by Arab-Khazaei et al. was employed (9). This instrument evaluates perceived clinical competence across six dimensions, with a total score ranging from 45 to 225. Higher scores indicate higher levels of perceived clinical competence. In the present study, the internal consistency reliability of the questionnaire was assessed using Cronbach's alpha coefficient and was found to be 0.92.

The theoretical basis and conceptual structure of this instrument are consistent with established frameworks for assessing competence in surgical and operating room settings, including the perioperative competence model developed by Gillespie et al. (9, 22). By assessing various dimensions of clinical competence including basic knowledge and skills, leadership ability, interaction with colleagues, clinical skills, empathy, and professional development the instrument provides a comprehensive assessment of students' perceived clinical competence.

Statistical Analysis

Data were analyzed using SPSS version 26 (IBM Corp., Armonk, NY, USA). Quantitative variables were described using means and standard deviations, whereas qualitative variables were summarized using frequencies and percentages. Pearson's correlation coefficient was used to examine the relationships between professional commitment, its dimensions, and perceived clinical competence.

To compare the mean values of the primary variables between two sex groups and two academic disciplines, the independent-samples t-test was used when the assumptions of the test were met. For comparisons involving more than two groups, one-way analysis of variance (ANOVA) was performed. In addition, multiple linear regression analysis using the Enter method was conducted to identify variables associated with perceived clinical competence. The significance level was set at 0.05. These analytical methods are consistent with those used in similar studies, such as the study by Nasami et al. (2008) (23).

Ethical Considerations

This study was approved by the Ethics Committee of Rafsanjan University of Medical Sciences (Ethics Code: IR.RUMS.REC.1404.123). All participants were informed about the objectives and procedures of the study and provided informed consent before participation. Participation was voluntary, and participants were assured that their information would remain confidential and would be collected and analyzed anonymously without recording their names or identifying information. Participants were also informed of their right to withdraw from the study at any stage without any consequences. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Results

A total of 150 undergraduate students participated in this study. The majority of participants were female (76.0%), while 24.0% were male. Regarding academic discipline, 68.7% of the participants were enrolled in Anesthesia Technology and 31.3% in Operating Room Technology. All participants were single (100%). The mean age of the students was 21.4 ± 2.1 years, the mean grade point average (GPA) was 16.9 ± 1.4 , and the mean level of interest in their field of study was 4.2 ± 0.8 on a five-point scale. Further demographic and descriptive characteristics of the participants are presented in Table 1.

Table 1
Demographic and descriptive characteristics of the study participants (n = 150)

Variable	Category	Frequency (n)	Percentage (%)	Mean $\pm$ SD
Sex	Female	114	76.0	—
	Male	36	24.0	—
Field of study	Anesthesia Technology	103	68.7	—
	Operating Room Technology	47	31.3	—
Marital status	Single	150	100.0	—
Age (years)	—	—	—	21.4 ± 2.1
Overall GPA	—	—	—	16.9 ± 1.4
Interest in the field	—	—	—	4.2 ± 0.8

The mean total professional commitment score was 61.3 ± 9.8 , indicating a relatively high level of professional commitment among the participants based on the scoring criteria of the instrument. Among the three dimensions of professional commitment, affective commitment had the highest mean score (22.1 ± 3.8), followed by normative commitment (21.6 ± 3.2), whereas continuance commitment had the lowest mean score (17.6 ± 4.1). The mean perceived clinical competence score was 168.7 ± 24.3 . Detailed descriptive statistics and score ranges for the study variables are presented in Table 2.

Table 2
Correlations between study variables and perceived clinical competence among students

Variable	Mean $\pm$ SD	Score Range	Level/Category	Correlation with Clinical Competence (r)	p-value
Total professional commitment	61.3 $\pm$ 9.8	18–90	—	0.63	< 0.001
Affective commitment	22.1 $\pm$ 3.8	6–30	—	0.58	< 0.001
Normative commitment	21.6 $\pm$ 3.2	6–30	—	0.51	0.002
Continuance commitment	17.6 $\pm$ 4.1	6–30	—	0.15	0.062
Perceived clinical competence	168.7 $\pm$ 24.3	45–225	—	1.00	—
Overall GPA	16.9 $\pm$ 1.4	12–20	—	0.41	< 0.001
Interest in the field	4.2 $\pm$ 0.8	1–5	—	0.49	< 0.001

The results of Pearson's correlation analysis indicated a significant positive association between overall professional commitment and perceived clinical competence ($r = 0.63$, $p < 0.001$), suggesting that students with higher levels of professional commitment tended to report higher levels of perceived clinical competence. Significant positive correlations were also observed between affective commitment and perceived clinical competence ($r = 0.58$, $p < 0.001$) and between normative commitment and perceived clinical competence ($r = 0.51$, $p = 0.002$). In contrast, the association between continuance commitment and perceived clinical competence was not statistically significant ($r = 0.15$, $p = 0.062$).

In addition, GPA ($r = 0.41$, $p < 0.001$) and interest in the field of study ($r = 0.49$, $p < 0.001$) demonstrated significant positive associations with perceived clinical competence. These findings suggest that students with higher academic achievement and greater interest in their field of study tended to report higher levels of perceived clinical competence. The detailed results of the Pearson correlation analysis are presented in Table 2.

To further examine the variables independently associated with perceived clinical competence, a multiple linear regression analysis using the Enter method was performed. The results indicated that overall professional commitment ($\beta = 0.48$, $p < 0.001$), interest in the field of study ($\beta = 0.22$, $p = 0.003$), and GPA ($\beta = 0.18$, $p = 0.012$) were independently associated with perceived clinical competence. The regression model explained 49.3% of the variance in perceived clinical competence scores ($R^2 = 0.493$; adjusted $R^2 = 0.474$; $F(3, 146) = 45.82$; $p < 0.001$; $SEE = 17.61$). Among the variables included in the model, professional commitment demonstrated the strongest standardized association with perceived

clinical competence. The detailed results of the multiple linear regression analysis are presented in Table 3.

Table 3

Results of multiple linear regression analysis to identify predictors associated with students' perceived clinical competence (Enter method)

Predictor	95% Confidence Interval	p-value	t-statistic	Standardized β	SE	Unstandardized B
Constant	[40.24, 96.40]	< 0.001	4.81	—	14.21	68.32
Total professional commitment	[0.87, 1.51]	< 0.001	7.44	0.48	0.16	1.19
Interest in the field	[2.28, 11.10]	0.003	3.00	0.22	2.23	6.69
Overall GPA	[0.69, 5.55]	0.012	2.54	0.18	1.23	3.12
Model fit indices: R = 0.702; R ² = 0.493; Adjusted R ² = 0.474; F(3, 146) = 45.82; p < 0.001; SEE = 17.61.						

Overall, the findings demonstrated a significant positive relationship between professional commitment and perceived clinical competence among undergraduate Operating Room Technology and Anesthesia Technology students. In addition, academic achievement and interest in the field of study were positively associated with perceived clinical competence. The regression analysis further indicated that these three variables—professional commitment, interest in the field of study, and GPA—were independently associated with perceived clinical competence and collectively explained nearly half of its observed variance.

Discussion

The findings of this study demonstrated a positive and relatively strong correlation between professional commitment and perceived clinical competence among Operating Room Technology and Anesthesia Technology students ($r = 0.63$, $p < 0.001$). This finding indicates that students with higher levels of professional commitment simultaneously reported higher levels of perceived clinical competence. This association can be interpreted in light of Meyer and Allen's three-component model of professional commitment, which conceptualizes commitment across three dimensions—affection, continuance, and normative—and emphasizes the distinct nature of an individual's attachment to their profession (1). In the present study, affection commitment had the highest mean score among the three dimensions and demonstrated a relatively strong correlation with perceived clinical competence ($r = 0.58$, $p < 0.001$). From a theoretical perspective, stronger emotional attachment to the profession may be associated with greater motivation to learn, increased engagement in professional activities, and greater attention to the development and improvement of clinical skills. However, this interpretation should be considered with

caution, as the present study was cross-sectional and therefore cannot establish a causal relationship between professional commitment and perceived clinical competence.

Another finding of the present study was the significant positive correlation between normative commitment and perceived clinical competence ($r = 0.51$, $p = 0.002$), whereas the association between continuance commitment and perceived clinical competence was not statistically significant ($r = 0.15$, $p = 0.062$). This pattern may suggest that the affective and normative dimensions of professional commitment are more closely associated with students' perceptions of their clinical capabilities than the continuance dimension. Conceptually, affective and normative commitment place greater emphasis on interest, attachment, and a sense of responsibility toward the profession, whereas continuance commitment is more closely related to the perceived costs of leaving the profession (1). Nevertheless, further studies examining potential mediating and moderating factors are needed to provide a more precise explanation of these differences.

The present findings are also partially consistent with those of Pourkarimi et al. (2018), who investigated the mediating role of professional commitment in the relationship between professional competence and job performance among educational experts at the University of Tehran (14). Although the study population, variables examined, and research design differed from those of the present study, both studies highlight the importance of professional commitment in relation to professional competencies and performance. However, because the present study examined only correlational relationships among students, the findings cannot be interpreted as evidence that professional commitment leads to increased clinical competence or serves as a mediator in the relationship between competence and performance.

The findings of the present study are also consistent with those reported by Wu et al. (2020), who examined the association between professional commitment and humanistic caring ability among nursing students (19). Although humanistic caring ability is not synonymous with perceived clinical competence, both concepts reflect aspects of the competencies required for the provision of professional care. Therefore, the consistency between these findings may indicate the importance of professional attitudes and commitments in shaping certain dimensions of competence among health sciences students.

In the present study, GPA was also significantly and positively correlated with perceived clinical competence ($r = 0.41$, $p < 0.001$). Similarly, interest in the field of study demonstrated a significant positive correlation with perceived clinical competence ($r = 0.49$, $p < 0.001$). Furthermore, in the multiple regression analysis, overall professional commitment ($\beta = 0.48$, $p < 0.001$), interest in the field of study ($\beta = 0.22$, $p = 0.003$), and GPA ($\beta = 0.18$, $p = 0.012$) were identified as independently associated with perceived clinical competence, and the regression model explained 49.3% of the variance in perceived clinical competence. Among the variables entered into the multiple linear regression model, professional commitment had the largest standardized coefficient and demonstrated an independent association with perceived clinical competence scores. This finding highlights the simultaneous importance of

attitudinal and academic factors in students' perceptions of their clinical competence. However, given the cross-sectional design of the study, no causal conclusions can be drawn regarding the relationships among these variables, and other unmeasured factors may also contribute to these associations.

Another finding of the present study was the absence of statistically significant associations between age and sex and the main study variables. This finding is partially consistent with the study by Amini et al. (2020), which reported no significant differences in nursing students' attitudes toward professionalism based on sex (13). However, it should be noted that the absence of statistically significant associations in the present study does not necessarily indicate that these variables have no influence. The findings may have been affected by the sample size, characteristics of the study population, and limited variability in some demographic variables. Furthermore, because all participants in the present study were single, it was not possible to examine the association between marital status and professional commitment or perceived clinical competence.

The findings of the present study also underscore the importance of addressing factors involved in the development of professional commitment among health sciences students. In addition, Soleimanipour et al. (2017) validated organizational commitment patterns in educational organizations (24), while Arash et al. (2022) identified dimensions and components associated with enhancing and sustaining professional commitment among nursing students (25), findings that are broadly consistent with the results of the present study. Although their study populations differed from Operating Room Technology and Anesthesia Technology students, these studies collectively suggest that professional commitment is a multidimensional construct that may play an important role in the educational process and the development of students' professional identity.

Therefore, educational programs in Operating Room Technology and Anesthesia Technology should not be limited to the acquisition of knowledge and clinical skills but should also address the development of professional attributes, including responsibility, respect for patients and healthcare team members, empathy, and professional development. Given that the instrument used in the present study assesses clinical competence across six domains including basic knowledge and skills, leadership, interaction with colleagues, clinical skills, empathy, and professional development, future research examining the relationship between professional commitment and each of these domains separately may provide a more detailed understanding of this association.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, due to the cross-sectional design of the study, it was not possible to establish a causal relationship between professional commitment and perceived clinical competence; the findings only indicate associations between the variables at the time of the study. Second, both primary variables were assessed using self-report questionnaires; therefore, the possibility of response bias, social desirability bias, and common method bias cannot be excluded. Third, clinical competence was assessed as perceived competence

based on students' self-assessments, and objective evaluations of clinical performance by instructors, direct observations, or structured clinical examinations were not conducted. Therefore, the findings should not be considered directly equivalent to students' actual clinical competence.

Fourth, the study was conducted at a single university of medical sciences; therefore, the generalizability of the findings to other universities and student populations should be considered with caution. Fifth, because all participants were single, it was not possible to examine the potential role of marital status in the study variables. Finally, although the regression model explained a substantial proportion of the variance in perceived clinical competence, other factors, such as the clinical learning environment, educational support, self-efficacy, professional identity, and clinical experience, may also contribute to this relationship but were not examined in the present study.

Conclusion

The findings of this study demonstrated a significant positive association between professional commitment and perceived clinical competence among undergraduate Operating Room Technology and Anesthesia Technology students. In addition, professional commitment, interest in the field of study, and GPA were independently associated with perceived clinical competence scores, and the regression model including these variables explained 49.3% of the variance in perceived clinical competence. These findings suggest that, alongside the acquisition of specialized knowledge and clinical skills, attention to professional and motivational factors may be considered in educational planning for students.

However, given the cross-sectional design of the present study and the self-reported and perceived nature of the assessment of clinical competence, no causal conclusions can be drawn regarding the relationship between professional commitment and clinical competence or the direct effect of professional commitment on clinical competence. Longitudinal and interventional studies, along with objective methods of assessing clinical competence, including instructor evaluations and direct observation of clinical performance, are recommended to further investigate the nature of this relationship.

Practical Implications

Given the observed association between professional commitment and perceived clinical competence, it is recommended that educational programs in Operating Room Technology and Anesthesia Technology, in addition to providing specialized knowledge and clinical skills, place greater emphasis on strengthening professional identity, academic motivation, responsibility, and students' understanding of professional values and principles. Furthermore, creating supportive clinical learning environments, providing regular feedback, and offering students opportunities for active participation in clinical activities may be considered in educational planning. However, the effectiveness of these strategies should be evaluated in future interventional studies.

Declarations

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Author Contributions

Shiva Sadeghi Meymand: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing, Supervision, Project administration.

Yaser Abolhasani: Conceptualization, Methodology, Validation, Investigation, Writing – review & editing.

Yaser Soltanmoradi: Investigation, Data curation, Formal analysis, Writing – review & editing.

Mohammad Hossein Shakeri Gooki: Investigation, Data curation, Writing – review & editing.

Hossein Hasaninejad: Methodology, Validation, Writing – review & editing.

All authors read and approved the final version of the manuscript.

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Data Availability

The datasets generated and/or analyzed during the current study are not publicly available due to privacy and confidentiality considerations but may be obtained from the corresponding author upon reasonable request and with appropriate institutional approval, where applicable.

Ethics Approval and Consent to Participate

This study was approved by the Ethics Committee of Rafsanjan University of Medical Sciences (Ethics Code: IR.RUMS.REC.1404.123). All participants were informed about the objectives and procedures of the study and provided informed consent before participation. Participation was voluntary, and participants were assured that their information would remain confidential and would be collected and analyzed anonymously without recording their names or identifying information. Participants were also informed of their right to withdraw from the study at any stage without any consequences. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki.

Consent for Publication

Not applicable.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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