Original Article

An evaluation of professional identity formation: A comparison between academic and professional medical students

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Abstract

Background & Objective: Professional identity (PI) is essential in medical education to prepare students for interprofessional collaboration. The study analyses medical students' professional identity and the internal factors that influence it.

Material & Methods: This cross-sectional study was conducted from January to March 2023. Total sampling was conducted on fourth-year academic level and second-year professional level students. Questionnaires were distributed via Google Form and only completed questionnaires were analyzed. Professional identity was measured using Tagawa's Development Scale.

Results: The study was conducted at Hasanuddin University's Faculty of Medicine in Makassar, Indonesia. The total number of respondents was 492, consisting of 203 undergraduate and 288 second-year clerkship students. Students in both education levels showed positive results in self-control, awareness as a doctor, and reflection on the role of a doctor. However, social responsibility and self-external and self-internal internalization indicated lower scores. Age showed varying results for self-control, self-awareness as a doctor, and reflection on the role of a doctor. Living independently demonstrated differences only in the ability to self-externalize and self-internalize. The school of origin did not indicate significant differences for all Developing Scale factors. At the same time, parent occupation exhibited distinct effects on self-control, awareness as a doctor, reflection on the role of a doctor, and social responsibility. Motivation showed differences only in the factor of self-control.

Conclusion: Regarding self-control, self-awareness, and self-reflection, medical students' professional identities are better developed at the professional than academic levels. Integrity, internalization of external and internal influences, and social responsibility components are still low and do not vary. Age, parents' educational backgrounds, and reasons for enrolling in medical school influence professional identity formation

Keywords: professional identity, development scale, medical student.

Introduction

Professional identity is an influential factor in the functioning of an interprofessional collaboration. That factor can be a substantial issue as it can hinder the development of effective teamwork, including conflicting relationships related to different cultures, philosophies, educational requirements, statuses, and backgrounds of other professional groups, priorities, and competition (1). Professional Identity (PI) is "attitudes, values, knowledge, beliefs, and skills shared with others in a professional group." Professional identity development is an ongoing process influenced by several factors, including experience in practice and professional socialization (2). Besides, Tan explained that professional identity is self-awareness formed by a commitment to exercise competence and legitimacy following the profession's demands. Professional identity formation is not only limited to education but must continue throughout the career. Educational

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institutions must prepare students to understand and develop their professional identity (3).

Education is essential for developing a professional identity because, during this period, the transition to becoming a professional occurs. It has long been recognized that students' experiences in the education system impact their professional identity, and the methods used significantly affect how clinicians internalize their role as professionals (4). Jarvis-Selinger et al. suggest that medical education should be designed to ensure "medical students and residents perform competently and to consider how professional identity as physicians develops (5).

The competency-based curriculum forms the basis of the learning process at our institution. The educational process at our faculty consists of two levels, namely the academic level, which lasts for seven semesters, and the professional level, which lasts for two years. There are several changes in learning methods. In addition to conventional lectures, active learning methods, such as simulation skills, problem-solving, small group discussion, research, and presentation, are also applied at the academic level. There is a community service program that lasts six weeks. Students are trained to be involved in the community and develop programs according to the needs of the communities where they are located. A doctor's character development program course aims to train students in effective communication and the ability to work together and build empathy. The student makes a home visit, aiming to monitor the development of pregnancy, the delivery process, and the baby's growth. At the professional level, students will rotate to departments in the principal teaching hospital, in-network hospitals, and community health centers. Based on hospital regulations, interaction between students and patients is limited. Opportunities to train skills are decreasing because the number of students and residents is increasing.

Considering the importance of forming a professional identity and changes in the learning process in our institution, we are interested in evaluating Professional Identity Formation (PIF) in our students and assessing several internal influencing factors. Evaluation of the process of establishing professional identity has never been done in our institution.

Material & Methods

Design and setting(s)

This cross-sectional study was conducted at the Faculty of Medicine, Hasanuddin University, Makassar, Indonesia, from January to March 2023.

Participants and sampling

Sampling was carried out using the total sampling technique, where all students of the fourth-year medical education program and second-year students of the medical professional program were actively included in the research. Data collection was carried out using internet-based survey methods.

Data collection methods

The questionnaire was distributed online using Google Forms. Participants did not need to give names. The data will be processed if a Google form is filled out and sent back to the deadline two weeks after being distributed. Five factors can be assessed from the Development Scale, namely: factor one describes self-control as a professional (questionnaire questions 1–6), factor 2 is a person's awareness to become a doctor (questions 7, 8, and 14), factor 3 is a reflection of the role of the doctor (questions 9, 10, and 11), factor 4 describes the implementation of social responsibility (questions 12 and 13), and factor 5 is internal and external self-harmonization or self-integrity (question 15). Each item in the questionnaire was scored on a 7-point Likert scale that ranged from 1 (strongly disagree) to 7 (strongly agree), and four was neutral. Results are remarkably “lacking” when the score is 0 to 20%, “less” when 20% to 40%, “enough” when 40% to 60 %, “good” when 60% to 80%, and “very good” when 80% to 100%.

In the form, there are explanations about the purpose of this study. Being involved or not in this study did not affect the educational process. Researchers had no direct relationship with respondents participating in the study during data collection. This research has been approved by the research ethics commission of the Hasanuddin University Research Ethics Commission under Number 184/UN6.4.5.31/PP36/2023.

Data analysis

Because the data was not distributed normally, data analysis used non-parametric Kruskal-Wallis or Mann-Whitney tests to assess the differences between the academic and professional program medical students. SPSS version 27 was used to analyze the data.

Results

This study was conducted at the Faculty of Medicine, Hasanuddin University, Makassar, Indonesia. The total sample involved 492 respondents, consisting of 203 out of 268 academic programs and 288 out of 574 professional programs at the Medicine Faculty of Hasanuddin University. **Table 1** presents the characteristics of the respondents.

The questionnaire and the average scores for each variable are presented in **Table 2**. Variations were

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evident in questions 3, 4, 5, and 6, aimed at evaluating self-control (Factor 1), and questions 7 and 9, assessing self-awareness of becoming a doctor (Factor 2), as well as questions 10 and 11, measuring the reflection of the role of a doctor.

Figure 1 shows the variation in developing scale scoring based on the education level. Each factor was scored and classified as "very poor" when the score ranged from 0 to 20%, "poor" when the score fell within 21% to 40%, "fair" when the score spanned from 41% to 60%, "good" when the score fell within 61% to 80%, and "very good" when the scoring was within the range of 81% to 100%. Furthermore, factor 5, representing integrity, exhibited lower scores than others. Self-control, awareness as a doctor, reflection on the role of a doctor, and social responsibility showed promising outcomes in both stages of education. In contrast, internal and external self-integration indicated lower results.

Table 3 below presents the factors influencing professional identity. Age exhibited diverse results concerning self-control, awareness as a doctor, and reflection on the role of a doctor. Moreover, the living environment, particularly independence, demonstrated a difference in the ability to internalize both external and internal aspects. The location of the senior high school does not indicate significant differences in all factors. Parents' occupations showed varying outcomes for factors 1, 2, 3, and 4, while motivation only stated a difference in factor 1. Additionally, the education level exhibited differences in factors 1, 2, and 3.

Table 1. Characteristics of respondents

Variable	n	Percentage
Age		
20 – 22	290	58.9 %
23 - 25	189	38.4 %
26 - 28	13	2.6 %
Gender		
Male	149	30.3 %
Female	343	69.7 %
Domicile		
Parents	188	38.2 %
Family	97	19.7 %
Living independently	207	42.1 %
Senior High School Location		
City	308	62.6 %
Regency	184	37.4 %
Parents' Occupation		
Doctor	73	14.8 %
Other healthcare professionals	37	7.5 %
Non-healthcare professionals	382	77.6 %
Reason for Entering Medicine Faculty		
Personal desire	382	77.6 %
Parent desire	110	22.4%
Education Level		
Academic	204	41.5%
Professional	288	58.5%

Abbreviation: n, number of participants

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Table 2. Developing scale questionnaire

No	Item	Academic	Professional	p-value
		Median (Mean)	Median (Mean)	
1	I cannot tolerate colleagues with different mindsets from mine but sympathize with my actions	5 (4.76)	5 (4.68)	0.432
2	It is difficult for me to suppress desires and act rationally	4 (4.51)	5 (4.68)	0.154
3	It is very difficult for me to adjust and act according to the values and demands of the medical profession	5 (4.98)	6 (5.30)	0.008
4	I have never thought about the reasons or principles behind the code of ethics that need to be implemented	5 (4.92)	5 (5.14)	0.037
5	I am sometimes reluctant to do something that I am not interested in, even though I understand its importance	4 (4.40)	5 (4.76)	0.005
6	My behaviour in the medical world is not a true representation of myself	4 (4.55)	5 (5.10)	0.000
7	In daily life, I behave correctly as a doctor	4.50 (4.59)	5 (5.07)	0.000
8	I am aware of my position as a doctor	5 (4.83)	6 (5.51)	0.008
9	I accept expressions of gratitude, frustration, and anger from patients as personal self-evaluation materials	5 (4.93)	6 (5.30)	0.001
10	I consider my long-term interests and concerns when thinking about what I should do now	5 (5.00)	6 (5.23)	0.021
11	I use my beliefs and idealism as standards to evaluate my behaviour as a doctor	5 (4.82)	5 (4.91)	0.197
12	If I can contribute to improving society and organizations, I will be satisfied even without individual recognition	5 (4.76)	5 (4.94)	0.069
13	I encourage people around me to act based on the principles I believe in to fulfil my role as a doctor	4 (4.34)	4 (4.31)	0.966
14	I take on various roles that are needed by the community	5 (4.71)	5 (4.90)	0.071
15	I feel that I need to change my mindset and daily behavior	4 (4.10)	4 (3.84)	0.065

Note: Mann Whitney Test was used to compare participants.
Abbreviations: p, probability-value

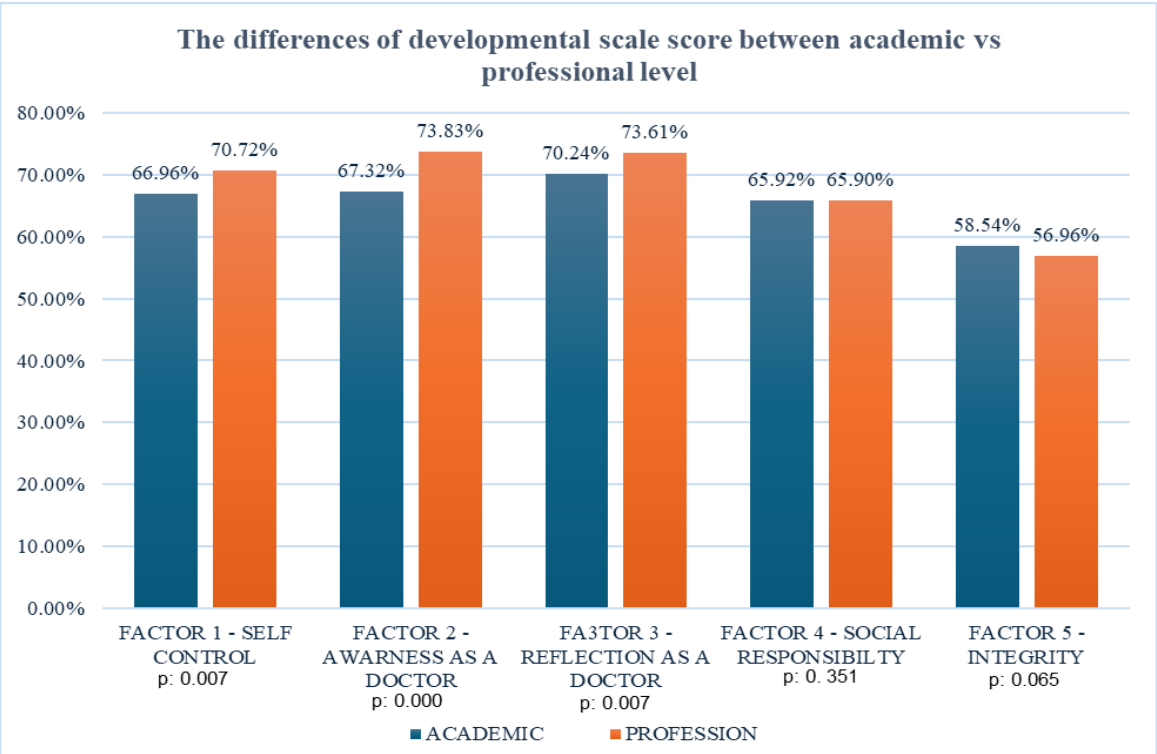


Figure 1. The difference in D.S. Factor scoring based on the program level
Note: Mann Whitney Test was used to compare participants.

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Table 3. Internal factors influencing the developing scale

Variable	Total Factor 1		Total Factor 2		Total Factor 3		Total Factor 4		Total Factor 5	
	Mean	p	Mean	p	Mean	p	Mean	p	Mean	p
Age*										
20 - 22	28.25	0.001	14.42	0.000	14.80	0.004	9.05	0.186	4.03	0.398
23 - 25	30.24		15.53		15.57		9.31		3.85	
26 - 28	29.38		17.77		17.54		10.08		3.69	
Gender**										
Male	28.15	0.050	14.72	0.366	14.81	0.183	9.18	0.942	4.01	0.550
Female	29.43		15.03		15.32		9.17		3.92	
Domicile*										
Parents	29.01	0.967	14.80	0.769	14.92	0.620	9.16	0.971	3.84	0.030
Family	29.11		15.13		15.37		9.20		3.74	
Living independently	29.05		14.97		15.29		9.17		4.15	
Senior High School Origin**										
City	29.03	0.992	14.89	0.665	15.10	0.684	9.15	0.756	3.91	0.551
District	29.08		15.01		15.27		9.22		4.02	
Parents' Occupation*										
Doctor	29.52	0.017	14.14	0.008	14.74	0.006	9.21	0.046	3.92	0.348
Other healthcare professionals	26		13.65		13.30		8.11		3.57	
Non-healthcare professionals	29.25		15.21		15.43		9.27		3.99	
Motivation for Studying at the Medicine Faculty**										
Parental desire	27.64	0.000	14.55	0.069	14.91	0.111	9.38	0.709	3.91	0.835
Personal desire	29.45		15.05		15.24		9.12		3.92	
Education Stage**										
Academic	28.12	0.007	14.14	0.000	14.75	0.007	9.10	0.351	4.10	0.065
Professional	29.70		15.50		15.46		9.23		3.85	

Note: *Kruskal-Wallis test was used for statistical analysis to compare categorical age-related and domicile-related variables.
**Mann-Whitney test was utilized to analyze gender, senior high school origin, motivation for studying at the Medicine Faculty, and education stage data.
Abbreviations: p, probability-value

Discussion

The learning methods in our institution have undergone substantial transformations, and student-patient interactions are becoming more limited at the professional level. Considering the significance of developing a professional identity during education to prepare for real-life work effectively, we are interested in research to evaluate the professional identity of medical students, as well as explore the internal factors influencing it. The Developing Scale developed by Tagawa et al. aims to measure individual maturity levels and professional identity development. Question items on the DS explain emotional control in various situations, recognition of professional roles, internalization of external values and social roles, daily reflection, and self-evaluation of the behavior expected of medical doctors. Tagawa developed DS using Kegan's human developmental model (6).

In this study, it was found that there were significant differences in self-control abilities (factor 1), self-awareness of becoming a doctor (factor 2), and reflection on the role of a doctor (factor 3) between academic-level and professional-level students. There were no significant differences between social responsibility (factor 4) and internal and external harmonization or integrity (factor 5). Even the total scoring for internal and external harmonization or integrity factors shows lower results than others.

Evidence suggests that medical students' perceptions of professional roles and responsibilities and changing circumstances and clinical experiences will significantly impact professional identity formation. Professional identity formation is influenced by sociocultural, family,

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academic, moral, religious, and gender-based roles, values, beliefs, and obligations (8).

This study reported that internal factors that influence the development of self-control abilities are age, parental occupation background, and motivation to follow self-will education. Internal factors for factors 2 and 3 are the age and educational background of non-medical parents. The parents' occupation background influences internal factors for factor 4, too. As for the integrity factor, especially in students who live independently away from their parents.

Several factors could strengthen motivation, including personal contact with the medical profession or obtaining information from family members working in the healthcare field. Such experiences significantly impact students, resulting in students recognizing the importance of the medical profession and igniting interest in pursuing a career as a doctor. Parents could play a crucial role in facilitating access to information about the medical profession and internships in the healthcare field. While parental and peer opinions were essential, undergraduates still emphasized the significance of following their desires. Study counselors reported that parental influence ranked among the most critical factors influencing the study choices of students (9).

According to Park and Hong (2022), before starting college at a medical school, most students do not understand the value or role of a doctor. When starting education, students develop their awareness of the role of doctors and the meaning of a career as a doctor. The awareness formed about the role of doctors will be the basis for why they should learn a certain way in medical school and what values they should pursue as future doctors (10).

Before enrolling in college, students whose parents are doctors can learn about the responsibilities of a doctor, the training requirements for becoming a doctor, and the medical school curriculum. Furthermore, the fact that parents are physicians may also impact self-control. Parents who work as doctors can serve as models for their children, particularly those driven to pursue medical school independently of their parents's wishes and to behave in a better and more responsible manner to uphold their parents' excellent reputations.

Students' self-control will improve with age and education levels. As our institution moves to the professional level, all learning activities are conducted in hospitals, including primary healthcare facilities, the principal teaching hospital, and educational network hospitals. To complete their education, students engage in various real-world learning experiences, including working directly with patients and their families, meeting and collaborating with medical students from other faculties, interacting with students at higher education levels, and even practicing working directly with supervisors. Even though the attending physician and resident directly supervise them, students can still put their knowledge and talents into practice, although opportunities are limited.

Learning frameworks that incorporate learning in actual conditions can also trigger the growth of self-awareness as a doctor and reflection on the role of doctors. According to Wald, Sochet, et al., the learning environment affects how students develop behavior and form identities as future doctors (11).

Our institution provides classroom facilities like an auditorium, small rooms for problem-based learning, a clinical skill room, a library, and outdoor areas for students to discuss. Internet availability in the campus area. Course materials in videos, skill guides, and PBL groups are available on electronic media and can be downloaded by students before the lecture starts or repeats. In addition to the classroom, there are learning programs in the community. Each student has an academic advisor to monitor their progress throughout the educational process. The learning methods used in the classroom are still diverse, conventional, and interactive lectures. During the professional phase, students are spread across several hospitals with different facilities, including primary health care, with assistance from supervisors. The learning process in hospitals varies depending on the department where the station is. It is expected that at this stage, students will interact more with supervisors.

Direct contact with patients and interacting with others in an actual situation may be essential in generating awareness about their identity as a doctor. The experience of intensive exposure to the conditions of the health field can explain why the recognition of professional identity shows significant differences between the academic and professional levels for factors of self-control, awareness as a doctor, and reflection of the doctor's role.

Hands-on experience in the learning environment contributes to students' understanding of what it is like and what it feels like to be a professional in practice. Experience is defined as direct contact with clients in a professional context that enables students to learn about professional training and professional roles. Experience

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during training will be embedded and provide opportunities for students to adjust to what they have learned in class. Students can use their learning strategies to develop practical knowledge and acquire the necessary skills to apply it (3).

Following Kegan's stage of development, assistance is still needed in the transition from imperial to interpersonal stages. The teacher or counselor still needs to provide clear instructions and directions because the individual still needs experience arranged by authority at this stage (12).

Learning from role models is not passive but rather an active process in which students learn to think, reason, and act like professionals. Feedback and criticism from "role models" in their interactions help shape students' thinking and reasoning (13). Having multiple "role models" provides space for students to explore and make choices in shaping their professional identity. So, it is surprising that the role of lecturers is to realize that they are "role models" for students and help students to understand and form their professional identity before entering the real world of work when they graduate and work in the community independently.

Integrity and social responsibility are the same at both levels. The outcome makes sense because students are not allowed to practice with patients as they used to independently and only act as observers. The results obtained in this study were still low at both stages of education, even lower at the professional stage, although not significant. Integrity that is not well-formed will have an impact on the professionalism of doctors.

Pamungkas, et al. reported that participation and motivation factors play a role in forming professional identity (14). The fifth factor, DS, namely external and internal harmonization, describes the attributes seen at the transition stage. At this stage, the individual can filter and evaluate all existing information, has been able to create a system, or is in a system that suits him (12).

Our study showed no difference in that factor based on education level. Student responses to these items were neutral for both academic and professional students. Students who lived alone showed significant differences compared to those who lived with parents or families. Living independently away from family and parents is considered to help with the formation of IP. They consciously take care of and manage their daily lives and determine their actions to achieve their desired goals.

Based on student responses to each question, it can be seen that for the academic level, most responses are, on average, to the choice of neutral or no opinion. There is a better response in professional-level students, except for items that illustrate integrity or harmonization of internal and external, who choose a neutral attitude or are assumed not to be able to determine opinions firmly.

Tagawa (2019) reported no significant DS score difference between 4th and 6th-year medical students. It is well known that the role of individuals in society, or their occupational identity, facilitates professional identity formation. Sixth-year medical students do not have enough clinical experience to show the actual development of fourth-year medical students. In addition, the responses of 4th-year medical students may be less precise or different from those of other respondents because their clinical experiences, such as observation and imagining, do not require them to assume clinical responsibilities or manage conflict in clinical practice (6).

It is realized that students' lack of involvement in handling cases found during hospital practice may be one factor that hinders the external and internal harmonization process from forming integrity. It takes an educational process that involves students actively handling cases in hospitals and health problems in the community, as well as collaborating with other professions that are further improved, which is expected to help enhance the self-harmonization and integrity of students.

It is a concern for institutions to think about the learning process that can trigger the development of professional identity from the beginning. Institutions are also expected to apply the principles of metacognition learning in the learning process, both at the academic and professional stages, and to increase the capacity of lecturers and teaching abilities with the principle of metacognition. The involvement of supervisors in clinical learning needs to be further improved, as does the distribution of students to hospitals' wider network for departments that only use one hospital as a place of learning. Because of the large number of students, students from other disciplines will greatly reduce the opportunities for contact with patients.

The study had some limitations, such as the distribution of questionnaires through Google Forms, which made it difficult to monitor whether they were completed by intended students and challenging to determine if they were genuine. In addition, only respondents from the last year of the academic level and the second year of the professional level participated in the study, so significant changes were not reflected.

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Conclusion

A development scale can be used to assess the formation of a medical student's professional identity. The formation of medical students' professional identity is better at the professional level than the academic level, especially in self-control, self-awareness, and self-reflection. Social responsibility factors and internalization of internal and external factors, or integrity, are still low and show no difference. Age, parents' educational background, and motivation when entering medical education play a role in developing students' professional identities.

It should be noted that social responsibility and integrity are not yet well formed in both medical students at the academic and professional stages. This matter needs special attention from the faculty. The involvement and role of students during the learning process need to be further improved. The principle of learning with metacognition needs to be considered in every aspect of learning. The involvement of supervisors in clinics needs to be further activated, and student dissemination should be expanded to other health facilities so that the opportunity to interact directly with patients is increased.

Ethical considerations

Informed consent regarding the purpose of this study was obtained through Google Forms. Participation was voluntary and did not affect the educational process. Questionnaires were filled out by willing respondents interested in engaging in the study. This study was conducted with ethical approval from the Hasanuddin University Research Ethics Commission under Number 184/UN6.4.5.31/PP36/2023.

Artificial intelligence utilization for article writing

Mendeley and Grammarly are used in this paper.

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Conflict of interest statement

The authors declared no potential conflicts of interest concerning this study, authorship, or publication.

Author contributions

Deviana Soraya Riu conceived, planned, and carried out the study and wrote the manuscript.

Haerani Rasyid and Agussalim Bukhari were involved in planning and supervising the study.

Irwin Aras and Asty Amaliah contributed to devising the study.

Irawan Yusuf, Irfan Idris, and Andi Alfian Zainuddin contributed to revising and interpreting the results.

All authors helped plan and shape the study and provided critical feedback, analysis, and manuscripts.

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Data availability statement

Upon a reasonable request, the corresponding author can provide the datasets analyzed in this study.

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