

The Impact of Peer-Assisted Learning in a Brazilian Medical Course

O Impacto do Programa de Monitoria em um Curso de Medicina no Brasil

El Impacto del Aprendizaje Asistido por Pares en una Cursada de Médica Brasileña

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Caroline Ventura

ORCID: <https://orcid.org/0000-0002-3380-2515>
Barão de Mauá University Center, Brazil
E-mail: carolineventura1143@gmail.com

Isabela Queiroz Guedes

ORCID: <https://orcid.org/0000-0003-0855-4035>
Barão de Mauá University Center, Brazil
E-mail: isabelaqueirozguedes@hotmail.com

Ana Cláudia Dinamarco Mestriner

ORCID: <https://orcid.org/0009-0006-4368-570X>
Barão de Mauá University Center, Brazil
E-mail: anaclaudiadm@baraodemaua.br

Liliane Sobreira Cury

ORCID: <https://orcid.org/0000-0003-1102-6460>
Barão de Mauá University Center, Brazil
E-mail: liliane.cury@baraodemaua.br

Júlio César Claudino dos Santos

ORCID: <https://orcid.org/0000-0001-6543-481X>
Federal University of São Paulo, Brazil
E-mail: cesar.claudino@unifesp.br

Camila Albuquerque Melo de Carvalho

ORCID: <https://orcid.org/0000-0003-2325-2844>
Barão de Mauá University Center, Brazil
E-mail: camila.melo@baraodemaua.br

Abstract

Introduction: In consideration of the need for constant communication and exchange of experiences to obtain knowledge, academic monitoring plays out a fundamental tool in the teaching-learning process. This study aims to evaluate the impact of the Peer-Assisted Learning (PAL) program on the development of its participants, with the goal of improving professional skills for the professional market. **Objectives:** This study analyzes the perception of those involved in the PAL program and the way in which the process affects the development of the participants, impacting learning, teaching, and interpersonal relationships. The objective is to evaluate educational praxis in medical education. **Methods:** The study used questionnaires with Likert scale questions to collect responses from students, tutors, and professors. Quantitative and qualitative analysis of the responses were performed, and Fisher's Exact test was used to verify the associations between the groups' answers. **Results:** Overall, 203 responses were collected, consisting of 165 from students, 28 from tutors, and 10 from professors. The study found that both students and tutors recognize the learning gain and expertise on the subject by the tutors, which helps in understanding. The PAL program was seen by both tutors and students as contributing to academic growth. **Conclusion:** The PAL program was found to positively influence the performance of students and the academic life of tutors, with academic achievement and the acquisition of essential skills and competencies for professional accomplishment.

Keywords: Methodology; Medical education; Medical students; Professors; Teaching.

Resumo

Introdução: Considerando a necessidade de comunicação constante e troca de experiências para obtenção de conhecimentos, a monitoria acadêmica constitui-se como ferramenta fundamental no processo de ensino-aprendizagem. Este estudo tem como objetivo avaliar o impacto do programa Peer-Assisted Learning (PAL) no desenvolvimento de seus participantes, com o objetivo de aprimorar competências profissionais para o mercado profissional. **Objetivos:** Este estudo analisa a percepção dos envolvidos no programa PAL e a forma como o processo afeta o desenvolvimento dos participantes, impactando a aprendizagem, o ensino e as relações interpessoais. O objetivo é avaliar a práxis educativa na educação médica. **Métodos:** O estudo utilizou questionários com perguntas em escala Likert para coletar respostas de alunos, monitores e professores. Foram realizadas análises quantitativa e qualitativa das respostas e utilizado o teste Exato de Fisher para verificar as associações entre as respostas dos grupos. **Resultados:** No geral, foram coletadas 203 respostas, sendo 165 de alunos, 28 de monitores e 10 de professores. O estudo constatou que tanto os alunos quanto os

monitores reconhecem o ganho de aprendizagem e expertise sobre o assunto por parte dos monitores, o que auxilia na compreensão. O programa PAL foi visto tanto por monitores quanto por alunos como uma contribuição para o crescimento acadêmico. Conclusão: Constatou-se que o programa PAL influencia positivamente o desempenho dos alunos e a vida acadêmica dos monitores, com o desempenho acadêmico e a aquisição de habilidades e competências essenciais para a realização profissional.

Palavras-chave: Metodologia; Educação médica; Estudantes de medicina; Docentes; Ensino.

Resumen

Introducción: Considerando la necesidad de una constante comunicación e intercambio de experiencias para la obtención de conocimientos, el seguimiento académico juega una herramienta fundamental en el proceso de enseñanza-aprendizaje. Este estudio tiene como objetivo evaluar el impacto del programa Peer-Assisted Learning (PAL) en el desarrollo de sus participantes, con el objetivo de mejorar las habilidades profesionales para el mercado profesional. **Objetivos:** Este estudio analiza la percepción de los involucrados en el programa PAL y la forma en que el proceso afecta el desarrollo de los participantes, impactando el aprendizaje, la enseñanza y las relaciones interpersonales. El objetivo es evaluar la praxis educativa en la educación médica. **Métodos:** El estudio utilizó cuestionarios con preguntas en escala Likert para recolectar respuestas de estudiantes, tutores y profesores. Se realizaron análisis cuantitativos y cualitativos de las respuestas y se utilizó la prueba exacta de Fisher para verificar las asociaciones entre las respuestas de los grupos. **Resultados:** En total se recogieron 203 respuestas, 165 de estudiantes, 28 de tutores y 10 de profesores. El estudio encontró que tanto los estudiantes como los tutores reconocen el aprendizaje y la experiencia sobre el tema por parte de los tutores, lo que ayuda a la comprensión. Tanto los tutores como los estudiantes consideraron que el programa PAL contribuía al crecimiento académico. **Conclusión:** Se encontró que el programa PAL influye positivamente en el desempeño de los estudiantes y en la vida académica de los tutores, con el rendimiento académico y la adquisición de habilidades y competencias esenciales para el desempeño profesional.

Palabras clave: Metodología; Educación médica; Estudiantes de medicina; Docentes; Enseñanza.

1. Introduction

Academic tutoring programs are important for extending opportunities and experiences and contributing to academic and professional development (Tavares et al., 2017). These programs aim to facilitate constant and close exchanges of knowledge and expertise through open dialogue, which is a necessary aspect of the pedagogy of autonomy (Freire, 2006).

Peer-Assisted Learning (PAL) programs involve mutual guidance and learning among individuals of similar social groups, leading to acquisition of knowledge and improvement of understanding of the subject (Topping & Ehly, 1998). PAL programs are known as academic tutoring programs and are based on the principles of equal status and mutual help (Capstick, 2004).

Higher education institutions offer PAL programs as an informal learning environment for students to improve their skills and knowledge. PAL is offered for several disciplines, and students can choose according to their preferences and affinities (Vicenzi et al., 2016). PAL can be done in two ways: same year/level or cross-year/level/near peer PAL. The purpose of both approaches is mutual coaching and improvement of skills and knowledge. PAL is relevant for students to adapt to the university and perform better in their courses (Blohm et al., 2015).

PAL aim to increase the learning process by passing on complementary knowledge to non-tutoring students, making the tutor a helper and support for the entire academic path (Figueiredo et al., 2016). It is an opportunity that provides significant experience for the academic and professional curriculum, enabling cooperation and dialogue between students and professors (Barbosa et al., 2014). When properly structured, PAL is a reliable tool that makes the entire process of reviewing and consolidating content easier, in addition to improving college performance and effective student learning (Guraya & Abdalla, 2020).

This does not differ in courses in the health area, in which the PAL is included in the pedagogical project in accordance with the National Curriculum Guidelines for the Graduate Course in Medicine since 2001. This learning mechanism was included in these guidelines due to opinion CNE/CES n°1.133/2001, which was approved on August 7 of the same year (Brasil, 2001). It

was considered a complementary activity that has the objective of producing mechanisms for the use of knowledge acquired by the student, being extremely important for the development of autonomy, academic maturity and integral formation of student-tutors, in addition to providing opportunities for students under the tutelage of tutors the possibility of discussing academic topics and solving problems.

PAL is a valuable method that operates in various areas of education, including health, and aims to train good professionals with an active role in the prevention and health recovery principles established by the Unified Health System (SUS) (Barbosa et al., 2017). PAL allows for an intense exchange of learning among students and contributes significantly to student skills, communication, and teamwork, all of which are vital for high-quality patient care (Lochner et al., 2020). PAL takes place in various disciplines of the curriculum, and the selection of tutors occurs through several evaluation processes, including practical and theoretical tests, and an interview with the professor of the discipline. To be a tutor of a discipline, it is necessary to have already been approved in the same one.

From this, this work aimed to analyze and evaluate the perception of students, tutors and professors of the tutoring program, evaluating the educational praxis of tutoring programs in medical education, with the purpose to improving the training of medical professionals for the job market.

2. Methodology

2.1 Study design and participants

A basic approach research was carried out, both quantitative and qualitative. As for the objectives, it has a descriptive character, and thus, assuming the field research model (Pereira et al., 2018).

The sample was composed by medical students from the second period of the course onwards, tutors, current or who have already completed their tutoring period, and professors of the disciplines that make up the course's curricular matrix.

There was no discrimination in the selection of participants, the only criterion for participation being a medical student at the institution, enrolled in the second period, or higher; to be, or to have been, a tutor of some discipline in the curriculum; and finally, being a professor of the Medicine course at the same institution that has a tutoring program.

2.2 Data collection

Data collection took place through an online questionnaire, via Google forms, sent to students, tutors and professors. Each of the three groups had their own questionnaire with questions following the Likert Scale, to express their level of agreement.

2.3 Data analysis

Given this, we obtained the following data: A total of two hundred and three responses were collected from monitors, tutors and professors. Quantitative and qualitative analysis of the responses of the groups about the tutoring program in the medical course at this institution was carried out. Therefore, Fisher's Exact test was used to verify the associations between the students' assessment of the tutors' mastery of the content and their perceptions regarding the clarification of doubts and the role of the monitors in understanding the content, to compare students and monitors in regard to the perception of the influence of the tutor in the classes and activities on content learning, and to compare tutors and professors regarding the perception of academic and professional maturity provided by participation in tutoring programs. All tests were performed using a significance level of 5%.

2.4 Trustworthiness

Before answering the questions, the participant had access to the Free and Informed Consent Form (FICF), available in the same forms as the questionnaire. In addition, the present study guaranteed the preservation of the data obtained by them, confidentiality and anonymity, and data collection began after the Project was approved by the Ethics and Research Committee (CEP), with CAAE: 55489622.7.0000.5378.

3. Results and Discussion

3.1 Results

Students and tutors evaluated significantly differently the impact of the presence of tutors in classes and subject activities on content learning ($P = 0.035$). Both students and tutors considered their presence in classes and activities to consolidate content to be positive. However, it was seen that the students considered this impact more relevant than the tutors themselves, with a higher frequency of concordant responses. These results can be seen below in Table 1.

Table 1 - Perception of students and tutors about the impact of the presence of tutors in classes and discipline activities on content learning.

Group	Positive impact on content learning		P
	Agree	Doesn't Agree	
Students	156 (94,5%)	9 (5,5%)	0,035*
Tutors	23 (82,1%)	5 (17,9%)	

*Fisher's Exact Test. Source: Authors.

Therefore, it is clear that the presence of tutors in classes or in activities of the discipline is beneficial for consolidating the content.

Furthermore, it is essential to point out that the students evaluated in an extremely positive way the domain and knowledge of the content by the tutors, and that the tutoring was of fundamental importance for the understanding of the concepts and solidification of the information. In addition to agreeing that the program enables deeper and easier communication with the professor, which is also supported by the professors' questionnaire, which has eight affirmative responses that tutoring activities facilitate communication with students, as well as help in identification of difficulties.

Moreover, it was observed that there was an association between the students' assessment of mastering the tutor's content and their perception of clarifying their doubts ($P < 0.001$). Students who better evaluated the tutor's mastery of the content, agreed (totally or partially) more often that their doubts were clarified. An association was also obtained between the students' assessment of mastering the tutor's content and the perception that the tutor's work was essential for their understanding of the content ($P < 0.001$). Students who better evaluated the mastery of the tutor over the content, agreed (totally or partially) more often that it played an essential role in their understanding of the content. These results are displayed in Table 2.

Table 2 - Assessment of students in the tutor's content domain and perception about clarifying doubts and the role of the tutor in understanding the content.

	Domain of tutor content			P
	Good	Very Good	Excellent	
Clarified Doubts				
Totally agree	1 (0,9%)	16 (14,4%)	94 (84,7%)	<0,001*
Agree	4 (8,5%)	29 (61,7%)	14 (29,8%)	
Undecided	3 (42,9%)	3 (42,9%)	1 (14,2%)	
Tutor was essential in understanding the content				
Totally agree	1 (1,0%)	23 (22,2%)	84 (80,8%)	<0,001*
Agree	6 (13,3%)	20 (44,4%)	19 (42,3%)	
Undecided	0 (0,0%)	1 (25,0%)	3 (75,0%)	

*Fisher's Exact Test. Source: Authors.

Therefore, it is seen that the mastery of the content by the tutors influences the fact that they are able to transmit knowledge effectively and result in an adequate understanding of the subject.

In agreement, the vast majority of tutors considered that the experience of being a tutor allowed them to deepen their studies in addition to an increase in their understanding capacity, considering that the tutoring activity added very positively to their academic life as well as in the future and professional performance. Besides, it is interesting to point out the considerations raised by the tutors when questioned in an open question, which often highlights the improvement in the ability to socialize, through frequent interaction with students, as well as the improvement of dialogue and skill for oratory.

Finally, professors and tutors evaluated significantly differently the intensity with which participation in tutoring programs (PAL) promotes academic and professional development of students ($P = 0.002$). Tutors perceive a greater impact than professors of participation in tutoring programs on academic and professional life in student tutors, however with both claiming that this evolution comes from tutoring. Such results are observed below in Table 3.

Table 3 - Perception of professors and tutors regarding the academic and professional maturity provided by participation in the tutoring program.

Group	Academic and professional maturity provided by participation in the PAL.		P
	Partially Agree	Totally agree	
Professors	4 (40,0%)	6 (60,0%)	0,002*
Tutors	0 (0,0%)	28 (100,0%)	

*Fisher's Exact Test. Source: Authors.

Therefore, it is agreed by both groups, tutors and professors, that the per-assisted learning results in the academic maturity of the tutors.

3.2 Discussion

The students' surveys indicated a high level of satisfaction with the tutors' mastery and knowledge of the content. The literature supports this perception, as students typically view their tutors as possessing the necessary skills for effective teaching. Tutors are recognized for providing accurate and focused guidance, meeting the needs of non-tutoring students (Jawhari et al., 2021).

Furthermore, not only did the tutors receive positive evaluations for their ability to explain the content, but the vast majority of students also deemed the tutoring program essential for clarification and comprehension of the subject matter. A literature review examined the effects of Peer-Assisted Learning (PAL) and found that, in addition to benefiting the tutors, there was also a positive impact on the students, including enhanced learning, improved academic development, and evaluative performance (Herrmann-Werner et al., 2017).

The benefits of knowledge sharing among students are responsible for these positive outcomes (Lima et al., 2022). Tutors have a better understanding of the students' learning difficulties and areas that need improvement. They can also identify at what stage a skill is well-established (Kassab et al., 2005). The close relationship between tutors and students enables tutors to identify challenging concepts and provide simpler explanations. This social equality allows students to feel comfortable expressing themselves and gaining confidence by observing someone of similar background in the role of the educator (Fallaha et al., 2018). Therefore, PAL is considered a useful educational tool that promotes active learning and support from more advanced colleagues in the course, enabling students to acquire new skills (Chaudhuri et al., 2018).

These results are a reflection of the tutoring program creating a more welcoming learning environment (Soeiro et al., 2021), where non-tutoring students feel more secure in exposing their difficulties, doubts and making mistakes (Carr et al., 2016). In this way, it is worth mentioning that the educational environment encompasses several factors (Centena et al., 2022), such as the physical space itself, the students, professors and also the student support systems, such as tutoring groups, which motivate involvement and participation in the university (Hongkan et al., 2018). Therefore, learning with the tutors creates a safer teaching environment and even reduces the barriers that may exist between students (Chou et al., 2011). Being provided, for example, through greater cognitive proximity, allowing an explanation at an appropriate and more congruent level in language (Bulte et al., 2007).

This fact ends up reflecting on the greater proximity with the professor through the tutors, allowing for easier

communication, which was highly confirmed by this study. These feel more comfortable in sharing doubts, allowing tutors to obtain more truthful evaluation parameters to transmit to professors, since they are in a more comfortable educational environment that allows for more satisfactory and accessible learning (Ahmed et al., 2018). This also explains the fact that the vast majority of students agree with the idea that having tutors in classes taught by the professor results in positive consequences in understanding the content, since their presence complements the professor's learning model (Sivico et al., 2021).

In this research, the tutors agreed that the teaching experience enabled a greater depth in the content, improving their own ability to understand and consolidate knowledge. Many studies prove that the act of teaching develops the power of understanding on the subject. It is possible that such a benefit is linked to the fact that the tutor organizes the information in the mind and, at the time of tutoring, retrieves it and constantly repeats it, granting learning in an integral and more permanent way (AlShareef et al., 2019).

The PAL program provides an opportunity for tutors to improve their medical knowledge and enhance their communication skills in explaining, guiding, and dialoguing with patients, which is crucial for their future professional performance (Burgess et al., 2016). This program has been shown to improve the communication skills of its participants, being an important complement to faculty teaching and a significant addition in academic construction, leading to better doctor-patient relationships (Belsi & Murtagh, 2018). Studying with peers at a similar level has been considered an effective method to improve student performance and motivation (de Menezes & Premnath, 2016), contributing to their academic persistence (Tokumasu et al., 2022).

Regarding academic life, participants have reported significant benefits from being part of a tutoring program. Research shows that tutors have experienced improvements in various aspects of their lives, including knowledge about health, well-being, oratory, research and organizational skills. They also report an increase in self-efficacy and self-understanding, which enriches the quality of their academic life (Wawrzynski et al., 2011). By becoming tutors, students with low self-esteem can improve their confidence and reflect on a more secure academic and professional future (Arrand, 2009). The PAL program has strengths in improving skills such as communication and leadership performance (Siddiqi et al., 2020).

The study found that academic tutoring programs, or PAL, provide tutors with a feeling of being more prepared for their professional career, improving their set of practical knowledge and enabling the development of a professional identity (Bugaj et al., 2019). The teaching ability is considered essential for physicians, and PAL is seen as capable of providing personal and professional evolution to the tutors. It not only benefits those who absorb the information but also for the students who transmit the knowledge (Khaw & Raw, 2016). Therefore, PAL is a reliable tool that contributes to the training of good professionals, socially adequate figures with an active role in the preventive model, and health recovery.

4. Conclusion

This study demonstrated that the Peer-Assisted Learning (PAL) is able to positively influence the performance of students in the discipline and tutors with improvement in the learning process, maturation in academic life, and acquisition of essential skills for effectiveness in professional practice. In addition, there was agreement between the groups involved in the program, with the perception of the tutoring program as something beneficial for both students, monitors and professors involved.

Furthermore, we express our thoughts on the need to develop more research of the benefits of such teaching methodology, as well as new articles on the subject to be published.

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