THE TRAJECTORY OF SELF-EFFICACY IN MEDICAL EDUCATION: CHALLENGES AND PROSPECTS

A TRAJETÓRIA DA AUTOEFICÁCIA NA FORMAÇÃO MÉDICA: DESAFIOS E PERSPECTIVAS

LA TRAYECTORIA DE LA AUTOEFICACIA EN LA FORMACIÓN MÉDICA: DESAFÍOS Y PERSPECTIVAS

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ABSTRACT

This longitudinal study investigated the trajectory of perceived self-efficacy among medical students over a four-year undergraduate program, grounded in Albert Bandura's Social Cognitive Theory. Self-efficacy, understood as the belief in one's capacity to succeed in specific situations, is essential for academic performance, persistence, and adaptation. The research followed students from the basic science cycle through clinical internship, utilizing the Perceived Self-Efficacy Scale in Higher Education (EAPES), which assesses five dimensions: academic competence, learning regulation, social interaction, proactive actions,

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and academic management. The findings revealed a significant decline in overall self-efficacy from the beginning of the course through the mid-clinical cycle, followed by partial recovery during the internship year, though not returning to initial levels. The proactive actions dimension exhibited the most pronounced decline and least recovery, suggesting that students' confidence in taking initiative and acting independently is particularly vulnerable during medical training. Individual trajectories varied considerably, underscoring the influence of personal and contextual factors. These findings have substantial implications for medical education, indicating the necessity for targeted pedagogical interventions, particularly during critical transition periods between cycles. The study contributes to understanding how the escalating demands of medical training impact students' perceived competence.

Keywords: Self Efficacy. Medical Students. Longitudinal Study. Medical Education. Professional Training.

RESUMO

Este estudo longitudinal investigou a trajetória da autoeficácia percebida em estudantes de medicina ao longo de quatro anos de formação, fundamentando-se na Teoria Social Cognitiva de Albert Bandura. A autoeficácia, entendida como a crença na capacidade de sucesso em situações específicas, é essencial para o desempenho acadêmico, persistência e adaptação. A pesquisa acompanhou estudantes desde o ciclo básico até o internato, utilizando a Escala de Autoeficácia Percebida no Ensino Superior (EAPES), que avalia cinco dimensões: acadêmica, regulação da formação, interação social, ações proativas e gestão acadêmica. Os resultados revelaram um declínio significativo na autoeficácia geral do início do curso até a metade do ciclo clínico, seguido de recuperação parcial no internato, embora não retornando aos níveis iniciais. A dimensão de ações proativas apresentou o declínio mais pronunciado e menor recuperação, sugerindo que a confiança dos estudantes em tomar iniciativas e agir independentemente é particularmente vulnerável durante a formação médica. As trajetórias individuais variaram consideravelmente, evidenciando a influência de fatores pessoais e contextuais. Os achados têm implicações importantes para a educação médica, indicando a necessidade de intervenções pedagógicas direcionadas, especialmente durante períodos críticos de transição entre ciclos. O estudo contribui para compreender como as demandas crescentes da formação médica impactam a percepção de competência dos estudantes.

Palavras-chave: Autoeficácia. Estudantes de Medicina. Estudo Longitudinal. Educação Médica. Desenvolvimento Profissional.

RESUMEN

Este estudio longitudinal investigó la trayectoria de la autoeficacia percibida en estudiantes de medicina durante cuatro años de formación, fundamentándose en la Teoría Social Cognitiva de Albert Bandura. La autoeficacia, entendida como la creencia en la propia capacidad para alcanzar el éxito en situaciones específicas, es esencial para el desempeño académico, la persistencia y la adaptación. La investigación siguió a estudiantes desde el ciclo de ciencias básicas hasta el internado clínico, utilizando la Escala de Autoeficacia Percibida en la Educación Superior (EAPES), que evalúa cinco dimensiones: competencia académica, regulación del aprendizaje, interacción social, acciones proactivas y gestión académica. Los resultados revelaron un declive significativo en la autoeficacia general desde el inicio del curso hasta la mitad del ciclo clínico, seguido de una recuperación parcial durante el año de internado, aunque sin retornar a los niveles iniciales. La dimensión de acciones proactivas exhibió el declive más pronunciado y la menor recuperación, sugiriendo que la confianza de los estudiantes en tomar iniciativas y actuar de manera independiente es particularmente vulnerable durante la formación médica. Las trayectorias individuales variaron considerablemente, evidenciando la influencia de factores personales y

contextuales. Estos hallazgos tienen implicaciones sustanciales para la educación médica, indicando la necesidad de intervenciones pedagógicas dirigidas, particularmente durante períodos críticos de transición entre ciclos. El estudio contribuye a la comprensión de cómo las demandas crecientes de la formación médica impactan la competencia percibida de los estudiantes.

Palabras clave: Autoeficacia. Estudiantes de Medicina. Estudio Longitudinal. Educación Médica. Capacitación Profesional.

1 INTRODUCTION

The academic journey in medicine is widely recognized as challenging, demanding from students not only an extensive mastery of scientific knowledge and technical skills but also psychological robustness to confront the inherent pressures of training and future professional practice (Ten Cate et al., 2024). In this context, perceived self-efficacy emerges as a psychological construct of fundamental importance, directly influencing academic performance, persistence in the face of obstacles, and the capacity to adapt to new learning environments (Bandura, 1997). Self-efficacy, as defined by Albert Bandura, refers to an individual's belief in their own ability to organize and execute the actions required to produce specific outcomes. In other words, it is the conviction that one possesses the competencies to perform a task or achieve a particular goal. This belief is not merely a reflection of actual abilities but a powerful predictor of how individuals behave, the effort they invest, and the resilience they exhibit in the face of adversity (Bandura, 1986; Klassen & Klassen, 2018).

Medical education, with its complex and progressive curricular structure—transitioning from the basic sciences cycle to the clinical cycle and finally to the internship—imposes escalating demands on students. Each phase presents distinct challenges: the basic sciences cycle, with its intense theoretical load and the need to memorize vast content; the clinical cycle, which introduces patient contact and the practical application of knowledge, requiring clinical reasoning and interpersonal skills; and the internship, characterized by full immersion in the hospital environment, with significant responsibilities and the necessity for decision-making under pressure (Biswas et al., 2022). The transition between these phases can be a period of considerable stress and uncertainty, impacting students' perceptions of their own capabilities. Understanding how self-efficacy develops and evolves throughout this trajectory is crucial for identifying points of vulnerability and designing more effective pedagogical and psychological support interventions (Visoso, 2024; Costa Filho et al., 2022).

The literature has explored self-efficacy in various educational contexts, including medicine, but longitudinal studies tracking the same cohort of students over an extended period—capturing the nuances of changes in perceived self-efficacy across different training phases—remain relatively scarce (Zheng et al., 2020). Most research is cross-sectional, providing a snapshot of self-efficacy at a given moment but lacking the ability to trace fluctuations and the factors influencing them over time. The gap in the literature thus lies in the need for investigations that offer a more dynamic and process-oriented understanding of self-efficacy in medical education, particularly within a curriculum spanning several years and marked by significant transitions.

This chapter aims to address this gap by presenting the results of a longitudinal study that followed a cohort of medical students over four years, from the beginning of the course through to the internship. The study was conducted at a public university located in the interior of the state of São Paulo, from 2021 to 2025. The primary objective was to analyze the trajectory of perceived self-efficacy, identifying patterns of change and the factors associated with these fluctuations. We believe that the findings of this study can provide valuable insights for medical educators, educational policymakers, and the students themselves, contributing to the creation of learning environments that foster well-being and the development of more competent and confident professionals.

1.1 SOCIAL COGNITIVE THEORY AND SELF-EFFICACY

Social Cognitive Theory (SCT), developed by Albert Bandura, stands as one of the most influential theoretical frameworks for understanding human behavior, learning, and motivation (Bandura, 1986). At the core of SCT is the concept of human agency, which posits that individuals are not mere passive recipients of environmental stimuli but active agents who influence and are influenced by their environment, personal factors, and their own behavior in a triadic reciprocal causation process. Within this framework, perceived self-efficacy occupies a central position, regarded as the most important cognitive mechanism of human agency (Bandura, 1997).

Bandura (1997) contends that self-efficacy beliefs form the foundation of human agency, as they determine whether people will think optimistically or pessimistically, motivate themselves or become despondent, and how they will behave in challenging situations. Individuals with high self-efficacy tend to set higher goals, persist longer in the face of obstacles, recover more quickly from failures, and experience less stress and anxiety when confronting difficult tasks. In contrast, those with low self-efficacy may avoid challenging tasks, give up easily, and focus on their personal deficits, potentially leading to a vicious cycle of unsatisfactory performance and diminished confidence (Klassen & Klassen, 2018; Burr, 2019).

Thus, the relevance of SCT and the self-efficacy construct to medical education is undeniable. The training of a physician is a continuous process of acquiring new skills and knowledge, where the ability to learn, adapt, and persist is constantly tested (Ten Cate et al., 2024). Self-efficacy beliefs influence career choices, engagement with learning, resilience in the face of clinical challenges, and the capacity to manage uncertainty and the complexity of medical practice (Bandura, 2001). Therefore, understanding how these beliefs develop and

are sustained throughout medical school is essential for optimizing the educational process and training more prepared and confident professionals.

1.2 SELF-EFFICACY IN MEDICAL EDUCATION

Medical education provides fertile ground for applying the principles of Social Cognitive Theory, particularly with regard to self-efficacy. The curriculum's complexity, heavy workload, exposure to human suffering, and constant performance evaluation are factors that can significantly impact students' perceptions of their own capabilities (Jebram, 2024; Zheng et al., 2020). Self-efficacy among medical students extends beyond mere confidence in learning and memorizing content; it encompasses trust in clinical skills, communication, diagnostic reasoning, decision-making, and stress management.

Studies have demonstrated that self-efficacy is positively correlated with academic performance in medical students. Those with higher self-efficacy tend to engage more actively in the learning process, employ more effective study strategies, and persist in difficult tasks, which translates into better grades and greater success in examinations. Moreover, self-efficacy has been linked to important outcomes for future medical practice, such as specialty choices, professional satisfaction, and the ability to handle uncertainty and clinical complexity (Klassen & Klassen, 2018; Bandura, 1977).

However, the trajectory of self-efficacy throughout medical school is not linear. Some studies suggest that self-efficacy may decline during specific phases of training, particularly during transitions to the clinical cycle and internship, when students confront the realities of medical practice and perceive their own limitations (Li et al., 2023). This decline may be attributed to factors such as the discrepancy between expectations and reality, exposure to challenging clinical situations for which students feel unprepared, workload overload, and a lack of constructive feedback. Understanding these fluctuations is vital for developing support programs and pedagogical interventions. For instance, mentorship programs, realistic clinical simulations, constructive feedback, and supervised mastery experiences can bolster students' self-efficacy during critical training moments (Yong & Roberts, 2024). Identifying the specific dimensions of self-efficacy most vulnerable to declines can direct the focus of these interventions, rendering them more effective.

In summary, this chapter is justified by the need to deepen understanding of self-efficacy in medical education through a longitudinal methodology that captures the complexity of its trajectory. Its relevance lies in providing evidence to enhance pedagogical practices and student support, contributing to the training of more competent, resilient, and confident physicians capable of facing professional challenges with agency and self-efficacy.

2 METHODS

The present study is characterized as longitudinal, prospective, and quantitative, tracking a cohort of incoming medical students at a public university located in northwestern São Paulo in 2021. The initial sample comprised 80 students, with a final sample of 50 participants who completed all data collection waves.

2.1 INSTRUMENTS

Two instruments were employed for data collection:

- **Sociodemographic Questionnaire**: Collected basic participant information, such as age, sex, race, place of residence, location of elementary and secondary education, among other variables. Developed by the researchers.
- **Perceived Self-Efficacy Scale in Higher Education (PSEHE)**: This scale, adapted and validated for the Brazilian context, assesses perceived self-efficacy across five specific dimensions of the university environment (Polydoro & Guerreiro-Casanova, 2010):
  - **Academic**: Beliefs regarding the capacity to perform study and learning tasks.
  - **Regulation of Training**: Beliefs regarding the capacity to manage one's own learning and development process.
  - **Social Interaction**: Beliefs regarding the capacity to relate to and interact with peers and professors.
  - **Proactive Actions**: Beliefs regarding the capacity to take initiatives and seek opportunities.
  - **Academic Management**: Beliefs regarding the capacity to organize and plan academic activities.

2.2 DATA COLLECTION

Data collection was conducted at four distinct time points, following students' progression through the medical program:

- **Time 1 (2021)**: Beginning of the course (basic sciences cycle).
- **Time 2 (2022)**: Second year of the course (onset of the clinical cycle).
- **Time 3 (2023)**: Third year of the course (mid-clinical cycle).
- **Time 4 (2025)**: Fifth year of the course (internship).

2.3 DATA ANALYSIS

Data were analyzed using descriptive and inferential statistics. To evaluate changes in perceived self-efficacy over time, repeated-measures Analysis of Variance (ANOVA) was employed, with a significance level of $p \leq 0.05$. Effect size was calculated using Cohen's *d* to indicate the magnitude of observed differences (Cohen, 1988).

3 RESULTS

The results of this longitudinal study offer a detailed perspective on the trajectory of perceived self-efficacy among medical students across four years of training. Data analysis enabled characterization of the sample, identification of evolutionary patterns in total self-efficacy and its dimensions, and observation of fluctuations at critical junctures in the medical curriculum. The presentation of findings is structured to emphasize the most salient aspects, including participant characterization, overall self-efficacy evolution, and an in-depth examination of dimensions, with particular emphasis on the "Proactive Actions" dimension.

3.1 SAMPLE CHARACTERIZATION

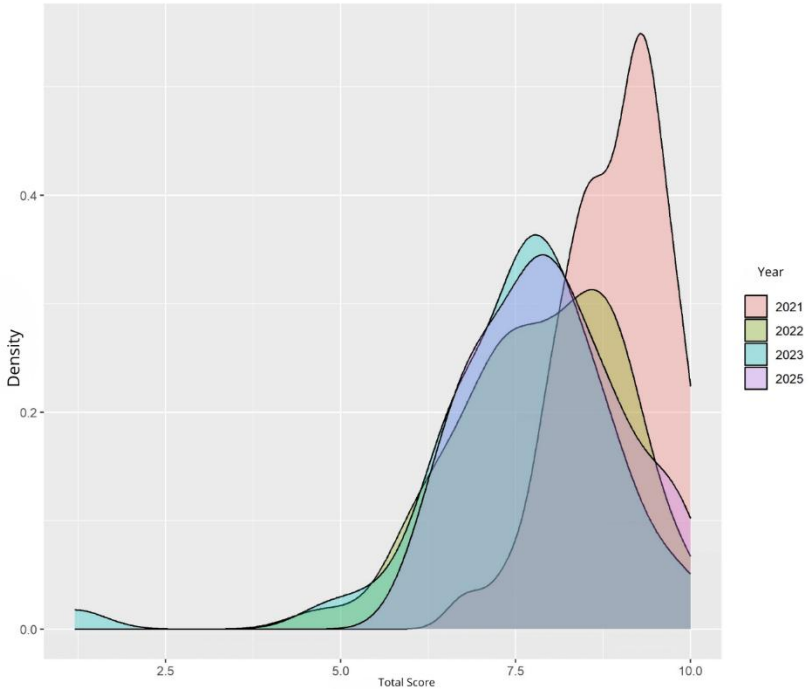
The study sample comprised 50 medical students tracked from the first year (2021) through the fifth year (2025) of the program. The sample exhibited a slight predominance of male students (**56%**). Most participants were young, with **76%** aged 18 to 20 years at course inception—a demographic profile typical of incoming medical students in Brazil. The predominance of students from private schools (**74%**) mirrors established patterns in access to medical higher education at select institutions (Figueiredo et al., 2022). These demographic features provide essential context for result interpretation, though the study's primary emphasis remains the individual longitudinal trajectory of self-efficacy.

3.2 EVOLUTION OF SELF-EFFICACY OVER TIME

Analysis of total perceived self-efficacy disclosed a significant pattern of change throughout the four-year follow-up period. **Figure 1** depicts the mean total self-efficacy scores at each data collection point.

Figure 1

Distribution of the Total Self-Efficacy Score among medical students at different stages of their undergraduate studies (Brazil, 2025)



Source: Research Data, 2025.

The Figure 1 clearly demonstrates a substantial decline in total perceived self-efficacy among students from 2021 (onset of the basic sciences cycle) to 2023 (mid-clinical cycle). The mean score, which was high at the course inception, diminished progressively as students progressed to more demanding phases of training. This decline was statistically significant ($p < 0.001$), indicating that students' perceptions of self-efficacy were considerably undermined during this period.

However, a partial recovery in self-efficacy was observed in 2025 (onset of the internship). Although self-efficacy increased relative to the nadir recorded in 2023, it did not revert to the initial 2021 levels. This recovery suggests that, as students adapt to the exigencies of the clinical cycle and prepare for the internship—or perhaps upon surmounting the most acute challenges of the clinical phase—they commence rebuilding their confidence, albeit incompletely. The disparity between 2023 and 2025 was also statistically significant ($p < 0.01$).

3.3 ANALYSIS BY DIMENSIONS

For a more nuanced understanding, the analysis was extended to the five dimensions of the PSEHE. All dimensions displayed a general pattern of decline followed by partial

recovery, akin to that observed in total self-efficacy. Nevertheless, the magnitude of both decline and recovery varied across dimensions. **Table 1** presents the mean scores for each dimension across the four years.

Table 1

Self-efficacy - scores by years.

Variable	2021 N = 50[1]	2022 N = 50[1]	2023 N = 50[1]	2025 N = 50[1]
Academic Self-Efficacy	8.92 ± 0.74	8.07 ± 1.25	7.81 ± 1.24	8.13 ± 0.95
Self-Efficacy in Learning Regulation	8.78 ± 0.87	7.71 ± 1.26	7.13 ± 1.84	8.02 ± 1.27
Self-Efficacy in Social Interaction	8.63 ± 0.92	7.76 ± 1.25	7.69 ± 1.47	8.31 ± 1.04
Self-Efficacy in Proactive Actions	8.87 ± 0.89	7.27 ± 1.49	6.81 ± 1.72	6.83 ± 1.71
Self-Efficacy in Academic Management	9.34 ± 0.67	8.55 ± 1.25	8.33 ± 1.50	8.54 ± 1.21
Total Score	8.90 ± 0.72	7.87 ± 1.14	7.56 ± 1.41	7.97 ± 1.03

[1]Mean ± standard deviation
Source: Research Data, 2025.

Table 1 reveals that the "Proactive Actions" dimension exhibited the most pronounced decline from 2021 to 2023 and also demonstrated the least recovery in 2025, remaining significantly below initial levels. Whereas other dimensions, such as "Social Interaction", displayed a less marked decline and a more robust recovery, self-efficacy in "Proactive Actions" appears particularly vulnerable to the pressures of medical training.

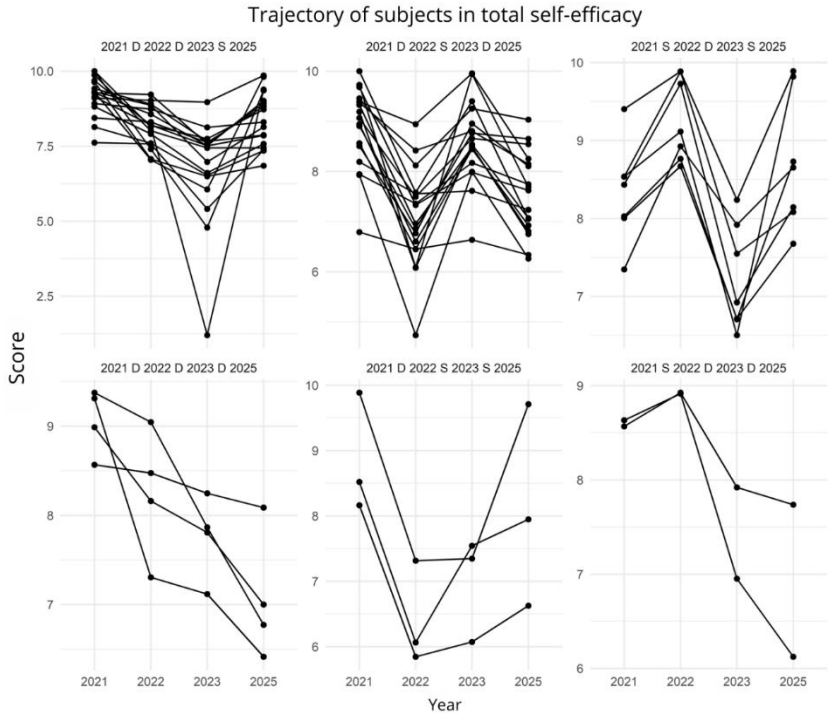
The decline in self-efficacy for "Proactive Actions" may be interpreted as a response to the escalating complexity and responsibility of clinical tasks. At the outset of the course, students may harbor an optimistic perception of their capacity for initiative-taking. However, upon confronting the realities of the clinical cycle—wherein decision-making bears direct implications for patient health and constant supervision prevails—confidence in independent proactive action may be profoundly undermined (Carlsson et al., 2023; Benett-Weston et al., 2024). The partial recovery in 2025 may reflect adaptation and the cultivation of greater autonomy during the internship, yet the persistence of lower levels relative to course inception constitutes a concerning finding.

3.4 INDIVIDUAL TRAJECTORIES

Although group means disclose clear trends, analysis of the individual trajectories of the 50 participants indicated considerable variability. Some students maintained relatively stable self-efficacy levels over time, whereas others experienced more drastic declines and slower or absent recoveries. **Figure 2** illustrates hypothetical examples of individual trajectories for total self-efficacy.

Figure 2

Individual trajectories of total self-efficacy scores in medical students throughout their undergraduate studies, indicating patterns of decrease (D), increase (S), or stability (I) in scores between 2021, 2022, 2023, and 2025 (Brazil, 2025)



Source: Research Data, 2025.

Figure 2, though illustrative, underscores the heterogeneity of individual experiences. This variability suggests that, while general trends exist, specific personal and contextual factors may modulate each student's self-efficacy trajectory. Factors such as coping strategies, social support networks, mentorship experiences, and personality traits may play a pivotal role in how individuals perceive and manage the challenges of medical training (Lajimi et al., 2025; Burr, 2019; Khawwaf et al., 2024). Identifying these individual factors and elucidating their interactions with curricular demands represent promising avenues for future research.

In summary, the results of this longitudinal study confirm a significant decline in perceived self-efficacy among medical students during the early and intermediate phases of the program, followed by partial recovery. The "Proactive Actions" dimension proved particularly vulnerable. These findings carry important implications for medical education, which will be explored in the discussion section.

4 DISCUSSION

The findings of this longitudinal study provide a profound understanding of the dynamics of perceived self-efficacy in medical students, revealing a pattern of substantial decline followed by partial recovery over four years of training. The identification of the "Proactive Actions" dimension as the most affected offers a crucial focal point for discussion and intervention development. This section interprets these results through the lens of Bandura's Social Cognitive Theory, explores implications for medical education, and addresses study limitations alongside future directions.

4.1 DECLINE IN SELF-EFFICACY: UNDERSTANDING THE PHENOMENON

The significant decline in perceived self-efficacy from 2021 to 2023—spanning the basic sciences cycle and the onset of the clinical cycle—resonates with extant literature on the rigors of medical training (Huamán-Tapia et al., 2023). At course inception (2021), students typically arrive with elevated expectations and inflated self-efficacy, often rooted in prior academic successes and an idealized view of the profession. This initial self-efficacy may be bolstered by mastery experiences in less demanding contexts and social persuasion (e.g., praise from family and teachers).

However, as students advance through the basic sciences cycle and, particularly, into the clinical cycle, they confront a more complex and demanding reality. The vast volume of information to assimilate, the intricacy of medical concepts, exposure to challenging clinical scenarios, and the imperative to develop practical skills under rigorous supervision can profoundly undermine their self-efficacy beliefs. Mastery experiences become harder to attain, and setbacks (e.g., examination errors, procedural difficulties, negative feedback) may be construed as evidence of incompetence, thereby eroding self-efficacy (Bandura, 1997).

The transition to the clinical cycle (2022–2023) is especially critical. It is during this phase that students begin applying theoretical knowledge to real patients, grappling with uncertainty, responsibility, and the integration of multifaceted knowledge domains and skills. The discrepancy between initial self-efficacy and the realities of clinical demands may precipitate a "reality shock," prompting a more realistic—and often diminished—reappraisal of their capabilities. Physiological and affective states, such as stress and anxiety prevalent in this phase, may also be misinterpreted as indicators of low competence, further contributing to self-efficacy diminution (Alabduljabbar et al., 2022; Salah, 2024).

The partial recovery observed in 2025, at the internship onset, suggests a process of adaptation and resilience. Following the nadir in 2023, students may have cultivated more effective coping strategies, accrued incremental mastery experiences, and received positive

feedback as their clinical skills matured. The internship, though intensive, affords greater opportunities for supervised practice and knowledge consolidation, potentially fortifying self-efficacy (Masoodi et al., 2022). Nevertheless, the failure to revert to 2021 levels indicates that the scars of prior challenges endure, rendering self-efficacy perceptions more realistic—and perhaps more cautious.

4.2 PROACTIVE ACTIONS DIMENSION: AN IN-DEPTH ANALYSIS

The finding that the "Proactive Actions" dimension endured the most pronounced decline and the least recovery is particularly noteworthy. Self-efficacy for proactive actions pertains to beliefs in one's capacity to take initiative, seek solutions, plan, and execute actions independently (Polydoro & Guerreiro-Casanova, 2010). In the medical context, this translates to a student's ability to identify problems, propose management plans, initiate procedures, or intervene in clinical situations without sole reliance on superior guidance.

At course outset, students may exhibit elevated self-efficacy for proactive actions, premised on prior autonomy in academic settings. However, medical culture—especially in early clinical phases—is often hierarchical and supervision-centric. Students are instructed to adhere to protocols, seek permission, and consult superiors before significant initiatives. This structure, while essential for patient safety and supervised learning, may inadvertently erode students' self-efficacy regarding proactive agency (Carlsson et al., 2023; Benett-W et al., 2024).

Exposure to complex clinical scenarios, where decision-making demands knowledge and experience beyond students' current purview, may reinforce perceptions of inefficacy in proactive action. Fear of errors, their potential consequences, and perpetual scrutiny may foster a passive, dependent stance, diminishing confidence in personal agency.

The limited recovery of self-efficacy for "Proactive Actions" in 2025, even during the internship, raises concern. Although the internship confers greater autonomy, persistent supervisory culture and case complexity may continue inhibiting full proactive self-efficacy expression. This implies a need to rebalance necessary supervision with fostering student agency and initiative. Cultivating responsible, safe proactivity is vital for training competent, autonomous physicians.

4.3 IMPLICATIONS FOR MEDICAL EDUCATION

The results of this study hold significant implications for medical education and student well-being.

1. **Identification of Critical Junctures**: The study highlights 2022 and 2023 (transition and mid-clinical cycle) as periods of heightened self-efficacy vulnerability. Medical institutions must prioritize these phases with targeted support programs.
2. **Focused Interventions**: The vulnerability of the **"Proactive Actions"** dimension underscores the need for pedagogical strategies actively promoting initiative and autonomy under safe supervision, such as high-fidelity simulations, academic leagues, and student organizations.
3. **Mentorship and Coaching**: Mentorship programs encouraging progressive responsibility assumption and reflective action, with constructive feedback.
4. **Progressive Mastery Opportunities**: Curricular structuring to provide incrementally complex mastery experiences, enabling confidence building.
5. **Constructive Feedback Culture**: Fostering feedback that is formative rather than merely evaluative, emphasizing development and self-efficacy enhancement.
6. **Curricular Development**: Revising curricula to integrate self-efficacy-building opportunities, particularly proactivity, via research projects, student leadership, and independent case discussions.
7. **Psychological Support**: Psychological monitoring and stress management programs to help students reframe failures as learning opportunities rather than incompetence indicators.

4.4 LIMITATIONS AND FUTURE DIRECTIONS

Although robust in its longitudinal design, this study has limitations. The sample of 50 participants, while suitable for a cohort study, derives from a single institution, potentially restricting generalizability to other medical schools with divergent curricula or cultures. Convenience sampling may introduce bias.

Another limitation is reliance on a self-report instrument (PSEHE), susceptible to response biases such as social desirability. Despite validation, perceived self-efficacy may not fully align with actual competencies.

Future research should encompass multicenter studies incorporating objective performance measures and self-efficacy assessments, in-depth analyses of modulating factors (e.g., personality, social support), and intervention trials with pre- and post-testing.

5 CONCLUSION

This study demonstrates that perceived self-efficacy among FAMERP medical students declines substantially during undergraduate training, particularly in the basic and clinical cycles. Although partial recovery occurs during the internship, initial levels are not

regained. Among assessed dimensions, **Proactive Actions** exhibited the sharpest decline, while **Social Interaction** proved more stable; individual trajectories varied considerably.

Scientifically, the research contributes meaningfully by longitudinally tracking students, offering an underexplored perspective on self-efficacy in medical training. Findings affirm self-efficacy as dynamic and responsive to stage-specific experiences. Moreover, the study validates the PSEHE's utility in capturing these shifts within the Brazilian context.

Practically, results indicate a need for targeted psychosocial and pedagogical support, especially during vulnerability peaks. Strategies bolstering resilience, proactivity, and burnout prevention can enhance student well-being and academic performance, fostering more confident, prepared professionals. Future investigations should employ mixed methods, incorporate mental health and academic performance factors, and extend to diverse contexts and postgraduate phases.

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