

Self-assessed Palliative Care Competency Acquisition among Brazilian Medical Students: A Cross-Sectional Study

Maisa Vitória Gayoso

Sao Paulo State University - UNESP

Úrsula Bueno do Prado Guirro

Federal University of Paraná

Thomas Nogueira Vilches

Sao Paulo State University - UNESP

Guilherme Antonio Moreira de Barros

`guilherme.am.barros@unesp.br`

Sao Paulo State University - UNESP

Research Article

Keywords: Palliative Care, Competency-Based Education, Medical Education

Posted Date: July 7th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-9566424/v1>

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Additional Declarations: No competing interests reported.

Version of Record: A version of this preprint was published at BMC Palliative Care on September 17th, 2026. See the published version at <https://doi.org/10.1186/s12904-026-02328-1>.

Abstract

Context

Palliative care (PC) supports individuals with life-limiting conditions by enhancing the quality of life for both patients and their families. Although international guidelines recommend PC training during medical school, Brazilian students often receive insufficient preparation in this area. This study aimed to evaluate the self-assessed acquisition of PC competencies among medical students in Brazil using the Palliative Competence Tool (PalliComp), a specialists-validated questionnaire.

Methods

A cross-sectional, observational, and quantitative study was conducted online between February and August 2024. Eligible participants were medical students aged 18 years or older enrolled in programs accredited by Brazil's Ministry of Education. They provided demographic information and completed the PalliComp questionnaire, which consists of 25 statements rated on a five-point Likert scale.

Results

A total of 385 students participated, with most from public institutions ($n = 247$, 64%) and the Southeast region ($n = 169$, 44%). Mean overall PalliComp scores increased across educational stages: 0.66 in the basic cycle, 0.71 in the clinical cycle, and 0.74 during the internship ($p < 0.001$). Significant improvements were observed in most competencies, particularly in communication and symptom management. However, competencies related to comprehensive care coordination, interdisciplinary teamwork, self-awareness, and continuing professional development showed no notable gains.

Conclusion

An improvement in the acquisition of palliative care competencies was observed, particularly between the basic and internship cycles of medical training. However, two competencies demonstrated limited progression throughout the curriculum and therefore warrant special attention. These findings highlight the need to strengthen both teaching and practical experiences in palliative care within medical education.

Trial registration: Brazilian Registry of Clinical Trials (UTN: U1111-1298-0091), registered 10 September 2023.

Introduction

Palliative care (PC) supports individuals diagnosed with life-limiting diseases through approaches aimed at improving the quality of life of both patients and their families ¹. According to the World Health Organization (WHO), approximately 56.8 million people worldwide require PC annually, most of whom live in low- and middle-income countries ².

Medical professionals should have the opportunity to receive PC education at the level of primary palliative approaches during undergraduate training ³. Specialized approaches, in turn, should be offered after graduation and tailored to the professional's field of practice ⁴. Research indicates that addressing PC during medical school reduces anxiety and fear among future professionals when dealing with end-of-life issues ⁵, while also improving patient care by relieving symptoms and preventing suffering ⁶.

Assessing the quality of PC education requires evaluating the acquisition of competencies ⁷. Competence can be defined as the collection of skills, knowledge, and attitudes acquired by a professional to perform a specific role ⁸.

The *Palliative Competence Tool* (PalliComp), developed and validated by Guirro et al. ⁹, was designed to evaluate the acquisition of palliative skills among medical students based on the ten PC competencies proposed by the European Association for Palliative Care (EAPC) ^{4,10,11}. Studies conducted in southern Brazil revealed insufficient acquisition of PC competencies among medical students, as measured by PalliComp, highlighting weaknesses in the PC learning process during undergraduate training in those contexts ^{7,11}.

However, it remains necessary to evaluate PC competency acquisition on a national scale, considering the diversity of student profiles and medical programs across Brazil. Such an assessment can inform improvements in medical education by identifying gaps in training.

The purpose of this study is to evaluate the self-assessed acquisition of PC competencies among medical students in Brazil across different undergraduate medical education cycles. This study aligns with the United Nations Sustainable Development Goals by promoting holistic, person-centered healthcare and by identifying educational gaps in medical training related to end-of-life care.

Methods

This was a cross-sectional, observational, quantitative, and descriptive study conducted in accordance with the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) guidelines ¹².

Data were collected online in Brazil between February and August 2024. Eligible participants were medical students aged 18 years or older, of both sexes, enrolled in undergraduate medical programs accredited by the Ministry of Education (MEC). Students under 18 years of age (whose participation should require approval from their legal guardians to participate in the study) and those who submitted incomplete questionnaire responses were excluded.

The study was approved by the institutional Research Ethics Committee and registered in the Brazilian Registry of Clinical Trials. Recruitment was conducted via email and social media messages directed to medical schools, course coordinators, academic directories, and student associations. The participants

were also encouraged to nominate peers. The invitation included a link to the online questionnaire, which began with the informed consent form. Only those who consented proceeded to complete the survey.

The participants first provided demographic information, including age, sex, geographic region, type of institution (public or private), and semester of study. They then completed the PalliComp instrument, a specialists-validated questionnaire, which consists of 25 statements—some intentionally incorrect—rated on a five-point Likert scale (“totally agree,” “agree,” “neither agree nor disagree,” “disagree,” “totally disagree”). Scores were calculated across ten competencies and overall. According to the instrument’s validation, the results are ideally interpreted at the group level rather than individually ⁹.

PalliComp assesses 10 core PC competencies: apply the core constituents of PC in the setting where patients and families are based; enhance physical comfort throughout patients’ disease trajectories; meet patients’ psychological needs; meet patients’ social needs; meet patients’ spiritual needs; respond to the needs of family carers in relation to short-, medium- and long-term patient care goals; respond to the challenges of clinical and ethical decision-making in PC; practice comprehensive care co-ordination and interdisciplinary teamwork across all settings where PC is offered; develop interpersonal and communication skills appropriate to PC; practice self-awareness and undergo continuing professional development ⁹.

The data were tabulated automatically via the REDCap platform, exported to spreadsheets, and analyzed statistically. Scoring followed the original validation: +1 (correct statement, “totally agree”), + 0.5 (correct, “agree”), 0 (correct, “neither agree nor disagree”), - 0.5 (correct, “disagree”), - 1 (correct, “totally disagree”). For intentionally incorrect statements, scoring was inverted. The responses were grouped by competency.

The score for competence j of individual i ($score_{ij}$) was normalized according to the following formula:

$$score_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)}$$

where x_{ij} is the score of individual i in competence j , and x_j is the vector of scores for the entire sample in competence j . Scores were thus transformed to a 0–1 scale, as recommended in the PalliComp validation. The overall score was calculated as the mean of the ten competencies. The results were grouped by academic cycle: basic (1st -4th semesters), clinical (5th -8th semesters), and internship (9th -12th semesters), in accordance with the Brazilian medical education curriculum.

The sample size was calculated based on the total number of medical schools in Brazil. Assuming a prevalence of 50%, a 95% confidence level, and a 5% margin of error, the required sample size was 385 students.

Statistical analyses were performed using R software, version 4.1.2. Demographic data are presented as absolute and relative frequencies. Differences in competency scores across academic cycles were assessed using the Kruskal–Wallis test. When significant differences were found, pairwise comparisons were conducted using the Wilcoxon test. A significance level of 0.05 was adopted.

Results

A total of 406 medical students enrolled in 124 institutions accredited by the MEC (30.5% of the Brazilian medical institutions) participated in this study. Of these, six students were excluded for being younger than 18 years at the time of questionnaire completion, and 15 students were excluded for incomplete responses to the PalliComp. Thus, 385 students were included in the final analysis (Fig. 1).

Participants ranged in age from 18 to 59 years (mean 24.6 ± 5.9). The majority were female ($n = 274$, 71.0%), self-identified as white ($n = 287$, 75.0%), were enrolled in public medical schools ($n = 247$, 64.0%), and were from the Southeast region ($n = 169$, 44.0%). Regarding academic cycles, 40.5% ($n = 156$) were in the basic, 31.7% ($n = 122$) were in the clinical, and 27.8% ($n = 107$) were in the internship (Fig. 2). The mean overall PalliComp scores (0–1 scale) were 0.66 ± 0.10 in the basic cycle, 0.71 ± 0.10 in the clinical cycle, and 0.74 ± 0.09 in the internship ($p < 0.001$).

An analysis of overall scores by cycle revealed statistically significant differences across all academic phases (Fig. 3). Figure 4 shows the distribution of scores by competency and academic cycle. Using the Kruskal–Wallis test, followed by pairwise Wilcoxon tests when appropriate, significant differences were identified across several competencies. Competency 9 (develop interpersonal and communication skills appropriate to PC) showed significant differences across all cycles. Competencies 2 (enhance physical comfort throughout patients' disease trajectories) and 7 (respond to the challenges of clinical and ethical decision-making in PC) differed significantly between the basic and internship cycles and between the clinical and internship cycles, but not between the basic and clinical cycles. Competencies 3 (meet patients' psychological needs) and 4 (meet patients' social needs) differed significantly between the basic and internship cycles only. Competencies 1 (apply the core constituents of PC in the setting where patients and families are based), 5 (meet patients' spiritual needs), and 6 (respond to the needs of family carers in relation to short-, medium- and long-term patient care goals) revealed significant differences between the basic cycle and both the clinical and internship cycles, but not between the latter two.

Competencies 8 (practice comprehensive care co-ordination and interdisciplinary teamwork across all settings where PC is offered) and 10 (practice self-awareness and undergo continuing professional development) did not differ significantly across cycles. No sociodemographic variables—including sex, age, ethnicity, or type of institution (public vs. private)—were significantly correlated with overall PC competence.

Discussion

The results of this study indicate a significant advancement in skill acquisition during medical training, particularly between the basic and internship cycles. Sociodemographic data showed no significant correlation with general competence in PC, suggesting that these variables do not influence competency development.

The demographic profile of the Brazilian medical students in this study was consistent with that reported in other national studies. Previous research has shown that medical education in Brazil remains predominantly accessible to the white population, despite efforts to increase racial and ethnic diversity in universities ¹³. Encouragingly, Brazil has sought to change this profile through the 2012 quota law, which aimed to reduce historical social inequalities and align the demographic profile of medical graduates with that of the general population. According to the 2022 national census, 43.5% of Brazilians self-identified as white ^{14,15}.

A 2025 study on the medical demographic revealed that the Southeastern Region of Brazil hosts nearly half of the country's medical schools, which aligns with the distribution of participants in this study ¹⁶. Although most medical schools in Brazil are private, the majority of participants here were from public institutions ¹⁶. This can be explained by the fact that, unlike in other countries where private institutions often receive research incentive grants, in Brazil, public universities are primarily responsible for supporting and promoting research ^{17,18}.

The 2023 Brazilian census of higher education reported a predominance of female medical students. ¹⁶ This trend is not unique to Brazil; for example, a 2020 Canadian study reported that women represented 52.4% of students enrolled in English-speaking medical institutions ¹⁹.

According to the Atlas of Palliative Care in Europe (2019), only nine of the 51 countries evaluated included PC training in medical education ²⁰. In Brazil, PC was formally recognized as a medical field of practice by the Brazilian Medical Association only in 2010, much later than in other countries ⁵. A 2023 study highlighted that countries with higher-quality end-of-life care typically provide extensive training for professionals in this field ²¹. In 2021, only 14% of Brazilian medical schools offered PC subjects in the curriculum, and of these, just 61% were mandatory ²². The inclusion of PC as a mandatory subject in the National Curriculum Guidelines for medical courses occurred only in 2022 ²³.

In this study, students demonstrated a significant increase in the acquisition of PC competencies during medical training, particularly between the basic and the internship cycles. This finding is promising and aligns with the WHO and the EACP recommendations that PC be routinely integrated into medical education. A 2016 systematic review revealed a gradual increase in PC teaching in medical schools worldwide compared with earlier reviews ²⁴.

The increase in competencies was most pronounced when comparing the basic cycle—the initial stage of admission—with the clinical and internship cycles. This can be explained by the fact that the early years of medical education focus on basic disciplines related to biological processes, which are often

poorly integrated with subsequent training. As students progress, training becomes more professionalized through clinical and internship activities^{25–27}.

Only three competencies showed significant improvement between the clinical and internship cycles: enhance physical comfort throughout patients' disease trajectories respond to the challenges of clinical and ethical decision-making in PC, and develop interpersonal and communication skills appropriate to PC. A systematic review of palliative care topics most frequently addressed during medical education revealed that pain management (related to physical comfort), communication skills, and attitudes toward death and dying are among the most commonly taught topics.²⁴ These competencies are reinforced during the final years of training, when students begin to assume responsibilities for patients and families care under faculty supervision, applying theoretical knowledge acquired earlier.

A study conducted in the United States of America revealed that medical students perceived a need for greater emphasis on communication skills in PC. Opportunities to observe professionals and residents engaging in end-of-life discussions, advance directives, and repeated communication training throughout medical school were cited as essential for consolidating these skills²⁸. Similarly, a study of fifth-year Thai medical students demonstrated that active and experiential learning strategies effectively enhanced knowledge and attitudes toward PC. These findings underscore the importance of longitudinal, curriculum-integrated interventions that not only deliver clinical content but also foster emotional resilience — an essential component for managing the psychological demands of end-of-life care²⁹. Similarly, a Brazilian study on the bioethical dimensions of PC competency acquisition emphasized the need to reorient medical education toward practices that uphold human integrity and dignity, transcending a strictly biological framework⁷. Collectively, these studies reinforce the relevance of our findings, which identified specific topics in medical training that must be prioritized during medical education.

Two competencies did not show significant improvement during medical training. The first, competence 8, involves comprehensive care coordination and interdisciplinary teamwork across all PC settings. This highlights a gap in multidisciplinary practice, reflecting physician-centered training. The benefits of multidisciplinary approaches are well documented; for example, studies have shown that lung cancer patients experience improved quality of life, symptom control, and reduced psychological distress when treated by multidisciplinary teams^{30,31}.

The second, competence 10, concerns self-knowledge and continuous professional development. Continuing education fosters practical transformations, particularly in a profession historically focused on curative efforts. Tools that help professionals cope with the emotional challenges of death and dying can strengthen resilience and broaden their understanding of patient suffering^{32,33}.

This study has both limitations and strengths. One limitation was the difficulty in obtaining responses from many medical course coordinators, which required the use of social media to reach institutions, particularly private ones. Additionally, some students declined to participate. Importantly, the tool

employed to evaluate competency acquisition was based on self-assessment, which may have influenced the results, and was not validated against other published questionnaires.

The main strength of this study lies in the inclusion of participants from medical schools across all regions of Brazil, making the findings potentially representative of the national reality. Furthermore, conducting the study in Brazil—one of the largest developing countries in terms of population and territory—provides valuable insight into an underrepresented area of medical education in the scientific literature.

Conclusion

Despite the observed improvement in the acquisition of PC competencies, particularly between the basic and internship cycles of medical training, two competencies require special attention owing to their limited enhancement throughout the curriculum. We suggest strengthening both teaching and practical experiences in PC across all stages of medical education to address these gaps.

Abbreviations

PC

Palliative Care

WHO

World Health Organization

PalliComp

Palliative Competence Tool

EACP

European Association for Palliative Care

STROBE

Strengthening the Reporting of Observational Studies in Epidemiology

MEC

Ministry of Education

Declarations

Human Ethics and Consent to Participate

This study was conducted in accordance with the principles of the Declaration of Helsinki. This study was approved by the Botucatu Medical School – Sao Paulo State University (Unesp) Research Ethics Committee (CAAE 70707523.7.0000.5411; opinion number 6.243.717).

Participants provided informed consent at the beginning of the survey. They received detailed information about the study's aims, and were informed that participation involved no health risks, and were free to withdraw at any time without adverse consequences. Information on the estimated

completion time, the researcher's contact details, data handling procedures, and reporting methods was provided. Only participants who actively consented to these terms proceeded with the survey.

Conflicts of interest/Competing interests

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be constructed as a potential conflict of interest.

Consent for publication

Participants provided informed consent for publication at the before being enrolled in the survey.

Funding

The author MVG acknowledges the support received from CAPES (Coordination for the Improvement of Higher Education Personnel) - Finance Code 001. Other authors report no funding associated with this work.

Author Contribution

Conceptualization: MVG, UBPG, GAMB; Methodology: MVG, UBPG, TNV, GAMB; Software: TNV; Data curation: MVG, TNV; Investigation: MVG; Validation: UBPG, GAMB; Formal analysis: MVG, UBPG, TNV; Supervision: UBPG, GAMB; Funding acquisition: MVG; Visualization: MVG; Project administration: GAMB; Writing - original draft: MVG; Writing - review & editing: MVG, UBPG, TNV, GAMB. All authors read and approved the final manuscript.

Acknowledgement

We extend our gratitude to all medical education institutions in Brazil that invited their students to participate in this study, as well as to the students who generously contributed. We also acknowledge Carolina Rambo for her valuable support in facilitating communication with medical institutions and students. The authors used artificial intelligence-based tools, including Microsoft Copilot and Curie (Springer Nature), to assist exclusively with English language editing and grammatical refinement. These tools were not used for content generation, data analysis, interpretation, or modification of the scientific meaning. The authors take full responsibility for the content of the manuscript.

Data Availability

Data were deposited into the Figshare database under DOI 10.6084/m9.figshare.32124832 and are available at the following URL: <https://doi.org/10.6084/m9.figshare.32124832>.

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Figures

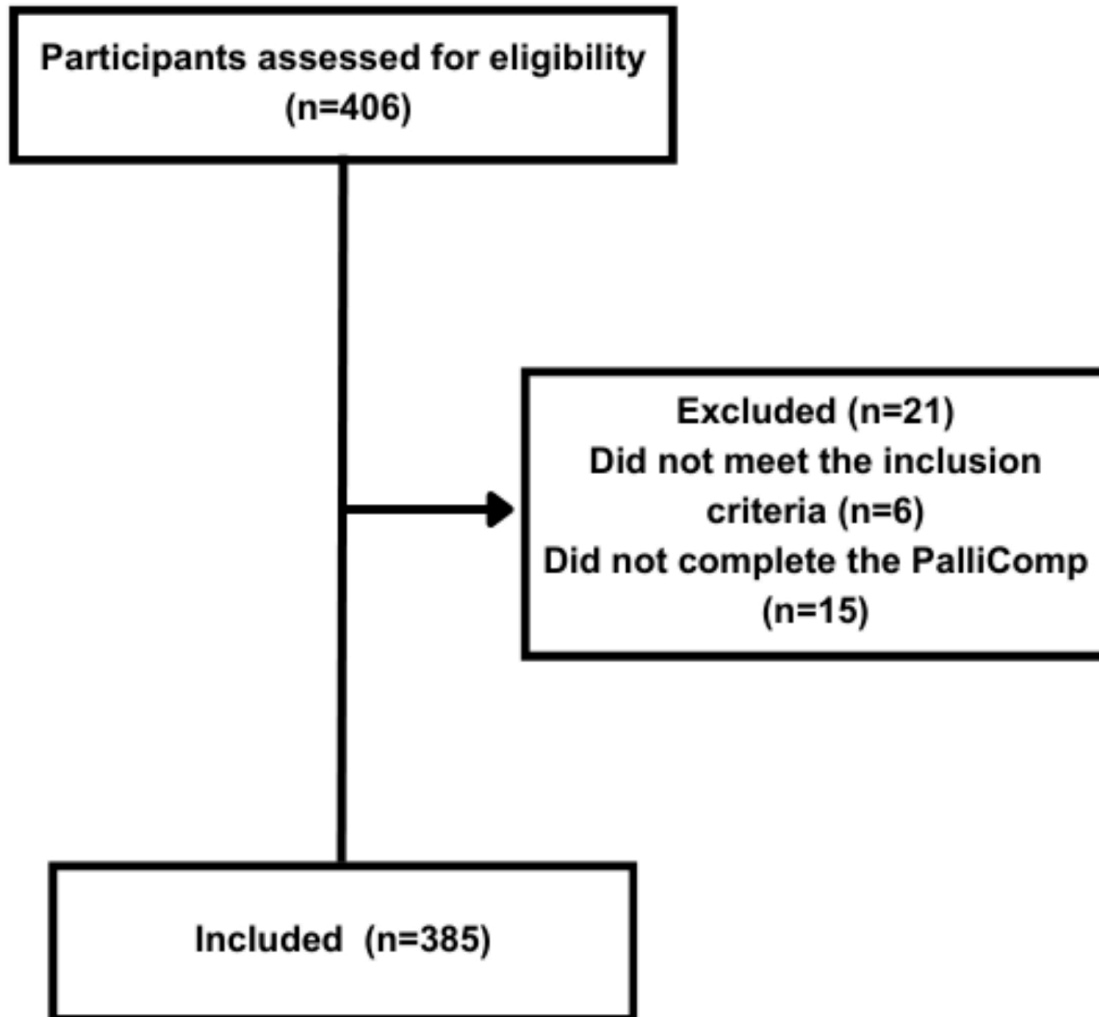


Figure 1

Flowchart of participant selection

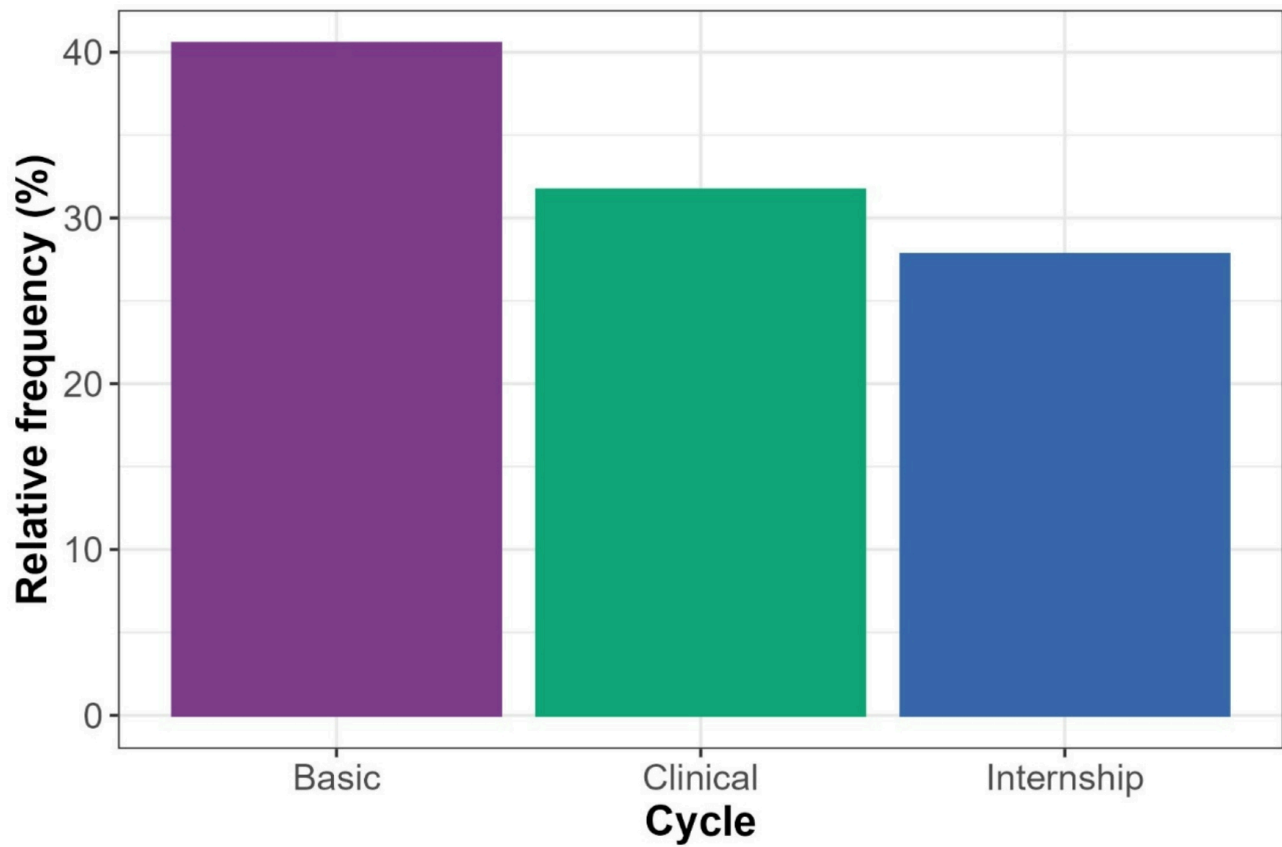


Figure 2

Percentage of participants per training cycle

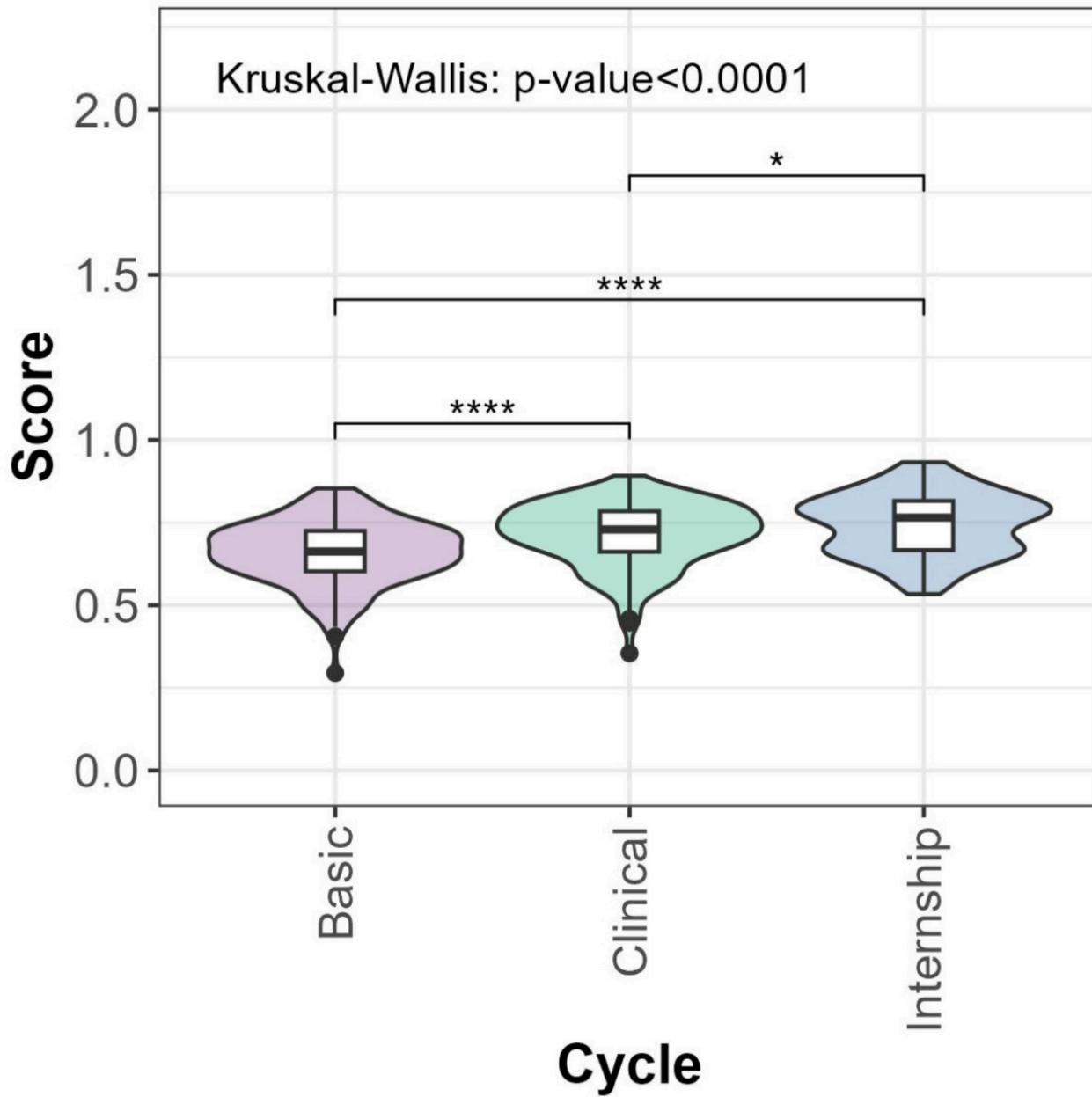


Figure 3

Evaluation of general competence by educational cycle. Boxplot and violin plot of the overall score per course cycle. A Kruskal–Wallis test and pairwise Wilcoxon tests were performed; *: $p < 0,05$; ****: $p < 0,0001$

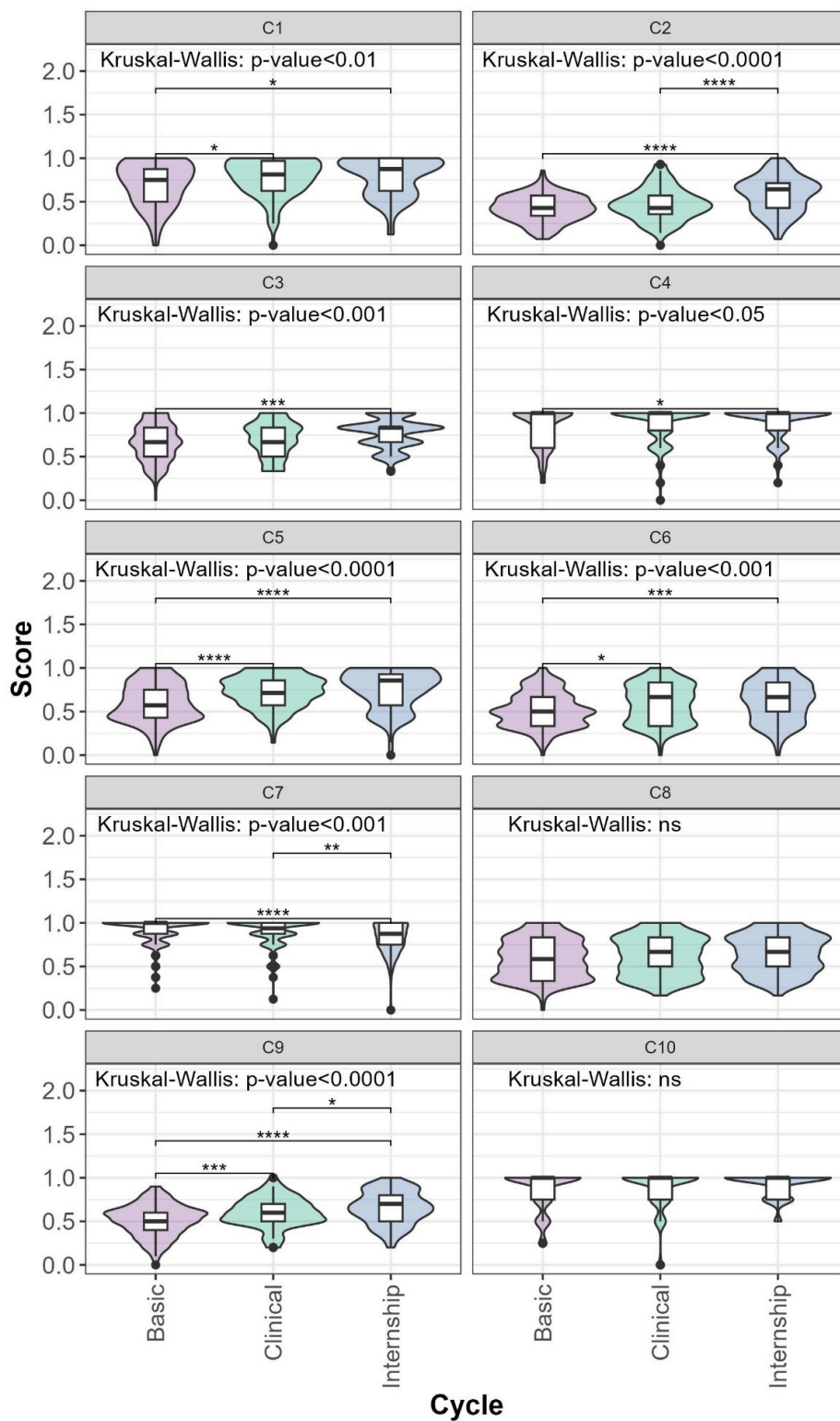


Figure 4

Evaluation of the 10 individual competencies per educational cycle. Boxplot and violin plot of the scores per course cycle and competency