Association between national regulatory frameworks and compulsory undergraduate palliative care education in Europe: a cross-sectional study of 55 countries

Carlos Centeno,[a,b,f,g,*] Timo Carpén,[c] Laura Monzón,[a,g] Irene Centeno,[b,g] Eduardo Garralda,[a,g] Jayco Cheng,[a] Greta Chlebopaševienė,[d] Mari Lõhmus,[e] Line Foss,[f] Barry James Anderson Laird,[f] and Stein Kaasa[f]

[a]ATLANTES Global Observatory of Palliative Care, Institute for Culture and Society (ICS), University of Navarra, Pamplona, Spain
[b]Clínica Universidad de Navarra, Pamplona, Spain
[c]Palliative Care Center, Comprehensive Cancer Center Helsinki University Hospital and Faculty of Medicine, University of Helsinki, Helsinki, Finland
[d]Institute of Oncology, Faculty of Medicine, Lithuanian University of Health Sciences, Kaunas, Lithuania
[e]Department of Chemotherapy, Haematology-Oncology Clinic, North Estonia Medical Centre, Tallinn, Estonia
[f]European Palliative Care Research Centre (PRC), Department of Oncology, and Institute of Clinical Medicine, University of Oslo / Oslo University Hospital, Oslo, Norway
[g]Navarra Institute for Health Research (IdiSNA), Pamplona, Navarra, Spain

The Lancet Regional Health - Europe 2026;■: 101871

Published Online XXX
https://doi.org/10.1016/j.lanepe.2026.101871

Summary

Background Universal access to basic palliative care (PC) requires that future health professionals receive undergraduate training. Despite long-standing European and international commitments, compulsory undergraduate PC education remains unevenly implemented. National regulatory frameworks may determine whether PC is systematically included in medical curricula. We examined whether the existence and type of national regulatory frameworks are associated with compulsory undergraduate PC education in medicine across 55 European countries.

Methods We conducted a cross-sectional observational study using harmonised indicators from the European Association for Palliative Care (EAPC) Atlas of Palliative Care in Europe 2025 to assess compulsory and optional PC teaching in medical schools across 55 European countries, together with national academic capacity. A targeted documentary review classified regulatory frameworks as Binding, Non-Binding, or No Regulation. Differences in coverage were analysed using Kruskal–Wallis and Mann–Whitney U tests with Bonferroni adjustment.

Findings Fifteen of 55 countries (27%) achieved full compulsory PC teaching in all medical schools, while 17 of 55 (31%) reported none. Among the remaining countries, 9 of 55 (16%) showed high but incomplete coverage (50–99% of medical schools) and 10 of 55 (18%) showed low but non-zero coverage (below 50%); four of the 55 countries or territories had no medical faculty or no available data. Binding regulatory frameworks were consistently associated with higher compulsory coverage, whereas countries without regulatory references showed the lowest levels. Differences between regulatory groups were statistically significant ($p < 0.001$). Academic capacity did not reliably predict compulsory coverage.

Interpretation National regulation, whether binding or non-binding, is consistently associated with the systematic inclusion of undergraduate PC education, though causality cannot be established from this cross-sectional analysis. Strengthening regulatory mechanisms at European, national, and local levels may represent a high-impact policy lever to reduce inequities in training and improve the quality and safety of end-of-life care across Europe.

Funding Joint Action JANE-2, co-funded by the European Union, and ICS–ATLANTES.

Copyright © 2026 Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Palliative care education; Undergraduate medical education; Health policy and regulation; Curriculum implementation; Europe

*Corresponding author. Department of Oncology, University of Oslo / Oslo University Hospital, Oslo, Norway.
E-mail address: ccenteno@unav.es (C. Centeno).

Research in context

Evidence before this study

Before undertaking this study, we drew on three complementary sources of evidence relevant to undergraduate palliative care education in medicine across Europe. First, we reviewed the education dimension of the European Association for Palliative Care (EAPC) Atlases of Palliative Care in Europe, including the quantitative indicators, the narrative syntheses accompanying those indicators, and the original country-level information submitted by national consultants during the Atlas process. We checked the consistency of the undergraduate education indicators in the 2025 Atlas against previous Atlas editions and returned, where needed, to the original country material underlying those indicators.

Second, for the regulatory component, we reviewed official national documents identified country by country through ministries, governmental and regulatory authorities, university and accreditation sources, and other official national repositories. No language restrictions were intentionally applied to the identification of regulatory documents. National legal and regulatory texts were examined in their original languages, with AI-assisted search and translation used under author supervision to support document identification and interpretation.

Third, to contextualise and clarify country-level educational profiles where needed, we undertook complementary country-by-country web-based searches between August and December 2025, drawing on Google Scholar, grey literature, reference lists of key documents, and search-engine results retrieved through AI-assisted search tools. Search terms varied by country but included combinations of country names with terms such as "palliative care", "undergraduate education", "medical education", "medical curriculum", "medical school", "regulation", "law", "accreditation", and "policy". We included peer-reviewed studies, educational reports, and official or grey-literature documents relevant to undergraduate palliative care education in medicine in each national context, and excluded publications focused exclusively on postgraduate education, non-European settings without direct relevance to the country under review, and documents without empirical, educational, or regulatory relevance to implementation. The evidence identified was heterogeneous and consisted mainly of descriptive studies, atlas-based educational indicators and narratives, original country-level consultant reports, grey literature, and official policy and regulatory documents; a formal risk-of-bias assessment and meta-analysis were not appropriate. The available evidence consistently documented substantial variation across countries, with palliative care teaching often being optional, inconsistently implemented, or absent from undergraduate medical curricula. However, most existing studies documented variability without examining its structural or governance determinants.

We found no previous pan-European analysis assessing whether binding or non-binding national regulatory instruments were associated with the implementation of compulsory undergraduate palliative care education in medical schools.

Added value of this study

This study provides the first continent-wide comparative analysis linking undergraduate palliative care education to national regulatory frameworks across Europe. Using harmonised indicators from the EAPC Atlas of Palliative Care 2025, complemented by targeted documentary review of relevant laws, ministerial regulations, accreditation standards, and professional requirements, we identify a clear association between regulation and educational coverage. Countries with binding regulatory frameworks show the highest median levels of compulsory undergraduate palliative care education, while non-binding frameworks are also associated with substantially better coverage than the absence of regulation. Importantly, we show that parliamentary palliative care laws alone rarely secure undergraduate education mandates, and that effective regulation frequently occurs through diverse mechanisms, including education regulations, licensure requirements, accreditation standards, or professional bodies. By integrating quantitative indicators with structured regulatory classification, this study moves beyond descriptive mapping and provides explanatory, policy-relevant evidence on how governance influences undergraduate training at scale.

Implications of all the available evidence

Taken together, the available evidence indicates that universal undergraduate palliative care education is not only an educational challenge, but also a health-system and governance issue. Insufficient training of future doctors has implications for the quality, safety, and efficiency of end-of-life care, and may also contribute to non-beneficial treatment and inequities in access to appropriate care. This study shows that regulatory engagement, whether binding or non-binding, is associated with more systematic and equitable educational provision. For policymakers, these findings suggest that strengthening regulatory frameworks for the education of health professionals may represent a high-impact and feasible intervention to improve palliative care capacity and the quality of care. Regulation does not require a single model: countries may act through legislation, ministerial regulation, accreditation systems, or professional standards, while respecting institutional and university autonomy. For Europe, aligning regulatory action with existing commitments offers a concrete opportunity to ensure that all future health professionals acquire essential palliative care competencies, with downstream benefits for patients, families, and society.

Introduction

There is broad international consensus that palliative care should be an essential component of undergraduate education in the health sciences, particularly in medicine and nursing. The World Health Organization (WHO) recognises palliative care as an "ethical responsibility of health systems" and has explicitly called for its integration into pre-service training; the 2014 World Health Assembly resolution urged all Member States to incorporate palliative care education at the undergraduate level.[1] In Europe, the Council of Europe, through its Committee of Ministers, adopted Recommendation Rec(2003)24, urging Member States to integrate palliative care into undergraduate curricula for medical and nursing students and to establish reference structures to support teaching and training.[2] Complementing this, the Parliamentary Assembly of the Council of Europe (PACE) adopted Resolution 2249 (2018), calling on governments to ensure that basic palliative care education is systematically included in all medical and nursing schools.[3] Together, these instruments frame undergraduate palliative care education as a core professional requirement rather than an optional element of the curriculum.

Professional associations and expert groups have translated these policy commitments into structured educational frameworks. The European Association for Palliative Care (EAPC) has issued recommendations for undergraduate curricula covering key domains such as pain and symptom management, psychosocial and spiritual care, ethics and law, communication skills, teamwork, and self-reflection.[4] Building on these principles, the Erasmus+ funded EDUPALL project developed and piloted a European undergraduate curriculum combining theoretical teaching, clinical exposure, and online learning.[5] Beyond Europe, initiatives such as the End-of-Life Nursing Education Consortium (ELNEC) in the United States and recommendations from the Latin American Association for Palliative Care (ALCP) similarly promote the integration of palliative care training in undergraduate programmes.[6,7] The PAL-LIFE project of the Pontifical Academy for Life further highlighted undergraduate education as a strategic priority for strengthening palliative care development worldwide.[8]

Despite this strong international consensus, undergraduate palliative care education remains unevenly implemented across Europe, with important implications for the quality, safety, and equity of end-of-life care.[9,10] In 2015, Carrasco et al. reported that only 13 European countries provided palliative care teaching in all medical schools, and that in just six countries it was compulsory, while 14 countries offered no undergraduate teaching at all.[11] A decade later, the EAPC Atlas of Palliative Care in Europe 2025 documents progress but also persistent gaps: only 15 countries now report compulsory palliative care teaching in all medical schools, while 17 still lack compulsory provision. Academic capacity has also expanded, with 121 full professors identified across 23 countries, compared with 17 countries in 2015, but their distribution remains highly uneven, leaving large regions without senior academic leadership in palliative care.[11,12]

These persistent disparities reflect a broader policy–implementation gap. As noted by Clelland et al.,[13] international and national commitments in palliative care do not consistently translate into concrete implementation within health systems. In the educational domain, this gap leaves large numbers of future health professionals entering clinical practice without formal undergraduate training in palliative care. This raises a critical governance question: might the presence and strength of national regulatory frameworks help explain whether undergraduate palliative care education is implemented systematically?

In this context, this study examines the association between national regulatory frameworks and the implementation of compulsory undergraduate palliative care education in medicine across 55 European countries.

Methods

Study design

We conducted a cross-sectional observational study using secondary data from the EAPC Atlas of Palliative Care in Europe 2025, complemented by a targeted documentary analysis of national regulatory frameworks, to examine the association between national regulatory frameworks and the implementation of compulsory undergraduate PC education in medicine across Europe. No primary data collection from individual experts was conducted for this analysis.

Institutional and project framework

This study was conducted within the ATLANTES Global Observatory of Palliative Care (University of Navarra, Spain), a WHO Collaborating Centre focused on monitoring global palliative care development and draws on data from the European Atlas of Palliative Care 2025.[12] The analysis was developed within the context of Joint Action JANE-2 (2025–2028), co-funded by the European Commission, specifically within Work Package 6 on Palliative Care, which aims to reduce heterogeneity in access to palliative care across Europe through strengthened governance and health-system integration.[14]

Data sources

The study covered 55 countries and territories. This scope encompasses the 53 Member States of the WHO European Region (including Israel and the Central Asian republics), along with Liechtenstein and Kosovo (in accordance with UN Security Council Resolution 1244). This selection aligns with the geographical and

political scope as presented in the EAPC Atlas of Palliative Care in Europe. This definition of 'European' follows established WHO and EAPC usage and includes countries geographically located outside conventional European boundaries, such as Israel and the Central Asian republics.

Regulatory and documentary sources

A targeted desk review of regulatory and policy documents was conducted to identify and classify national regulatory frameworks relevant to undergraduate palliative care education. Documents reviewed included laws, decrees, ministerial orders, accreditation standards, national strategies, and official guidelines issued by ministries, professional bodies, or university authorities. This review also aimed to identify recent regulatory developments not yet fully reflected in the Atlas dataset.

For countries in which the Atlas reported the existence of a national palliative care law, full legal texts were additionally identified and reviewed in detail, informed by parallel work within the ATLANTES Observatory on national palliative care legislation. All references to undergraduate education were independently verified through direct consultation of original legal documents.

AI-assisted tools (ChatGPT, Perplexity, Gemini and Open Evidence) were used exclusively to support document identification. AI outputs were never treated as primary sources, and only information traceable to original official documents was retained. Legal texts were reviewed in full, while non-binding documents were verified through cross-checking across sources.

Undergraduate education indicators

The EAPC Atlas of Palliative Care in Europe 2025, whose data were collected between 2023 and 2024 and published in 2025, provided the core dataset through its European Survey. The targeted documentary review of national regulatory frameworks was conducted between July and October 2025. We extracted Indicator 11, covering undergraduate palliative care education and regulation: (11.1) proportion of medical schools with compulsory PC teaching; (11.2) medical schools with optional teaching only; (11.5) number of full professors of palliative care. The wording, definitions, and data sources of the educational indicators used in this study are summarised in Supplementary Table S2 (Supplementary material S2). Indicator 11.5 records the total number of full professors of palliative care in each country, but does not distinguish between disciplinary affiliations (e.g., medicine, nursing, or social sciences); in the present study, it was therefore interpreted as a marker of national academic capacity rather than of discipline-specific undergraduate provision. It should be noted that academic positions below full professor level (assistant professors, lecturers, and clinical teachers) were not systematically captured in the Atlas dataset, which means the indicator may underestimate the actual academic capacity available for undergraduate teaching. Indicator 3, capturing the existence of a national palliative care plan, programme, strategy, or law, was used to provide broader policy context. Atlas indicators are based on structured consultation with multiple national experts per country using a standardised WHO-aligned methodology; no additional expert interviews were conducted for the present study. This methodology has been described in detail elsewhere in publications on the WHO-aligned Global Mapping process and its regional implementation.[12,14–16] For this analysis, the Atlas educational indicators were subjected to additional focused scrutiny by the author team, including consistency checks with previous Atlas editions, review of country-level narratives, and re-synthesis of original informant reports with specific attention to undergraduate education in medicine. Where ambiguities were identified, targeted searches of the scientific and grey literature were undertaken to contextualise reported educational profiles. This process allowed internal validation and refinement of indicators without altering their original definitions. Country-level narrative syntheses and documentary sources supporting this analysis are provided in Supplementary material S1.

Country-level accuracy was further supported by cross-checking reported data against official documents and grey literature. However, formal validation by individual national stakeholders outside the Atlas consultation process was not conducted at pan-European scale; national experts remain best placed to identify local inaccuracies, and this represents a recognised limitation of continent-wide mapping studies.

Country-level narrative syntheses summarising undergraduate palliative care education profiles and national regulatory frameworks were produced as part of this process and are provided in full as Supplementary material.

Regulatory framework classification

National regulatory frameworks relevant to undergraduate PC education were classified into four mutually exclusive categories: Binding Regulation (BR), when laws, decrees, or accreditation instruments explicitly mandated undergraduate PC teaching; Non-Binding Regulation (NBR), when strategies or recommendations promoted but did not require teaching; Other PC Regulation without undergraduate reference (Other); and None identified (NR). For each country, the primary regulatory instrument and the responsible authority were recorded.

Outcomes and analysis

The primary outcome was the proportion of medical schools providing compulsory undergraduate PC teaching. Secondary outcomes included the proportion of

faculties offering PC only as optional subjects and the number of full professorships in palliative care in 2025. Data were coded as percentages and fractions (n/N).

Descriptive statistics were used to summarise undergraduate PC coverage across countries. Differences between regulatory groups were analysed using the Kruskal–Wallis test, followed by post-hoc pairwise comparisons using Mann–Whitney U tests with Bonferroni adjustment. Countries classified as 'Other PC Regulation without undergraduate reference' were excluded from inferential comparisons, as this category does not position countries along the regulatory continuum examined and its inclusion would have reduced analytical interpretability. Analyses of academic capacity excluded the United Kingdom as an outlier due to its disproportionately high number of full professors. Statistical significance was set at $p < 0.05$.

Role of the funding source

The funders had no role in study design, data collection, data analysis, interpretation of findings, or the decision to submit for publication. The corresponding author had full access to all data and final responsibility for the decision to submit.

Results

Compulsory undergraduate palliative care education in medicine across Europe

Across the 55 European countries analysed, the provision of compulsory undergraduate PC education in medicine showed marked heterogeneity (Fig. 1). In 15 countries, all medical schools provided compulsory PC teaching, whereas in 17 countries no medical school reported compulsory undergraduate PC education. The remaining countries displayed intermediate levels of implementation, with compulsory teaching present in a minority or a majority of medical faculties.

Countries achieving full national coverage were predominantly those with identifiable national regulatory frameworks addressing undergraduate PC education. In contrast, countries without any form of national regulation most frequently reported absent or minimal compulsory teaching, clustering at the lowest end of coverage.

Coverage in medicine and academic capacity

Table 1 summarises undergraduate PC education in medicine alongside national regulatory frameworks and academic capacity.

Academic capacity, measured by the number of full professors of palliative care, varied widely across countries and did not consistently align with undergraduate coverage. As noted in the Methods, this indicator does not distinguish between disciplinary affiliations and should therefore be interpreted as a marker of overall national academic capacity in palliative care, not of discipline-specific educational provision. Several countries with full undergraduate coverage reported no full professors, whereas others with multiple professorships still showed incomplete or absent compulsory teaching.

Association between regulatory frameworks and compulsory education

Table 2 and Fig. 2 present the association between national regulatory frameworks and the proportion of undergraduate schools providing compulsory PC education. In medical education, countries with binding regulation showed predominantly high coverage, with a median of 100% (IQR 77.5–100), compared with 75% (IQR 33–87) in countries with non-binding regulation and 0% (IQR 0–17) in countries where no regulation was identified. The overall difference across regulatory groups was statistically significant (Kruskal–Wallis $H = 22.63$, $p < 0.001$). Post-hoc pairwise comparisons using Mann–Whitney U tests with Bonferroni adjustment showed that both binding and non-binding regulation were associated with higher coverage than no regulation (BR vs. NR, $p < 0.001$; NBR vs. NR, $p = 0.021$), whereas the difference between binding and non-binding regulation did not reach statistical significance ($p = 0.098$).

Illustrative national regulatory approaches

Despite the presence of national palliative care laws or equivalent high-level legal instruments in 13 European countries, explicit and binding provisions on undergraduate education were uncommon. France emerged as the only country in which the legal framework explicitly mandates the inclusion of palliative care in initial health-professional education. In most other countries, legal texts either did not refer to undergraduate curricula or focused primarily on continuing and specialist training. This pattern should be interpreted cautiously, as legal systems are complex and the present analysis does not claim the depth of specialised juridical review; it is nevertheless consistent across the countries examined and represents a policy-relevant finding.

In several countries, binding requirements for undergraduate PC education were established through education or licensure regulations rather than through palliative care legislation itself. For example, Germany introduced palliative medicine as a compulsory component of medical training through reform of the Medical Licensure Act, applicable to all faculties; similarly, Norway's national education regulations (Forskrift) require palliative care competencies across undergraduate medical curricula. Some countries relied on high-level administrative regulation mandating undergraduate competence in medicine (e.g., Latvia's Cabinet regulation), whereas others used professional regulation as the principal binding mechanism (e.g., the United Kingdom through medical regulatory standards).

Title of the article: Regulatory Frameworks and the Implementation of Undergraduate Palliative Care Education: A Cross-Sectional Analysis of 55 European Countries

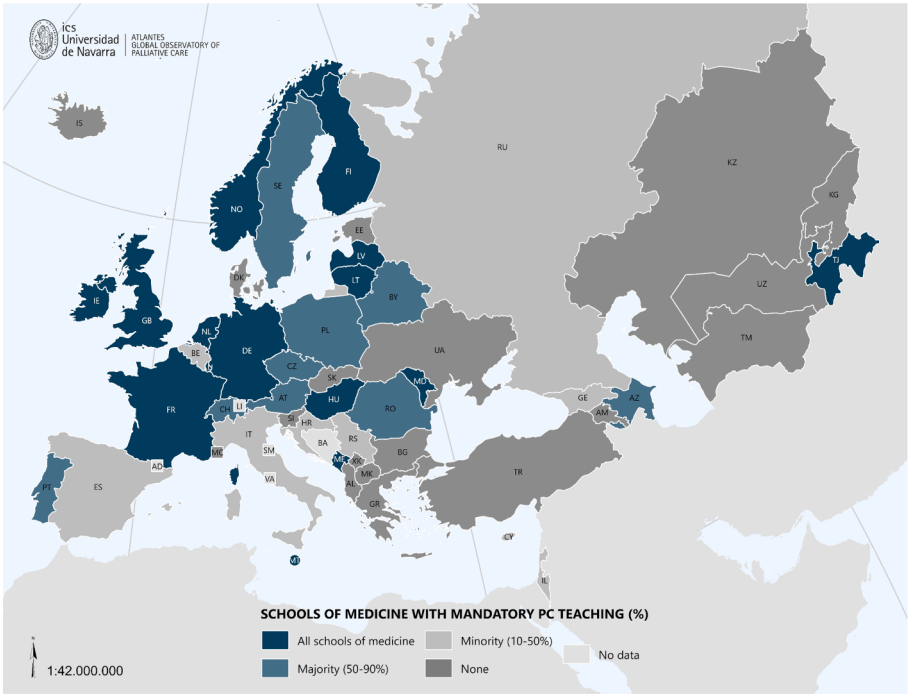


Fig. 1: Mandatory undergraduate palliative care education in medicine: proportion of universities by country in Europe (2025).

By contrast, non-binding strategies, national plans, or policy recommendations were identified in 9 countries for medical education (e.g., Finland, Iceland, Portugal), while others had no identifiable national mandate for undergraduate curricula (e.g., Cyprus, Georgia). Full country-level narrative syntheses and the underlying documentary sources are provided in Supplementary Materials S1.

Table 3 presents selected national examples illustrating how the regulatory types identified in the main analysis are operationalised in practice; these examples are intended to aid interpretation and do not constitute a separate case-study design. France represents a model of binding regulation, where explicit legal and ministerial instruments mandate undergraduate PC teaching in medicine, resulting in universal and consistent national implementation. Hungary illustrates binding regulation achieved through ministerial educational requirements rather than a standalone palliative care law, leading to compulsory inclusion in medical education, albeit with variability in curricular structure and depth. Portugal exemplifies a non-binding regulatory approach, where national strategies and professional guidance promote undergraduate PC education without legal obligation, resulting in heterogeneous implementation across universities. Finland represents a further non-binding model, relying on strong national recommendations and consensus-based curriculum guidance, achieving near-universal coverage despite the absence of legal mandates.

Discussion

This study provides a comprehensive and internally consistent assessment of undergraduate palliative care (PC) education across Europe. By combining indicators from the EAPC Atlas of Palliative Care 2025 with targeted verification and re-synthesis, it offers a systematic and geographically comprehensive overview of whether and how widely PC is formally required in undergraduate training across 55 European countries. The study does not assess the quality, content, or pedagogical approaches of that teaching, and findings should be interpreted accordingly. The marked variation observed across countries is likely to reflect broader inequalities in the preparation of the health workforce to deliver high-quality palliative care.

Only 15 of the 55 countries analysed currently ensure that all medical schools provide compulsory PC education. Although this still falls short of universal implementation, it represents clear progress compared with earlier European assessments, in which only 13 countries reported palliative care teaching in all medical schools and just six countries reported compulsory provision.[11] Beyond countries with full national coverage, a substantial additional group has moved

close to universal provision. Taken together, 24 of the 51 countries with medical faculties now ensure that compulsory PC education reaches at least half of their medical schools. By contrast, in 27 countries, compulsory PC education reaches only a minority of future doctors, or is absent entirely.

These findings must be interpreted in light of the scope of the indicators analysed. The study captures the extent of undergraduate PC education—whether teaching is compulsory or optional and how widely it is implemented—but does not assess quality, depth, pedagogical approaches, or learning outcomes. This limitation is inherent to large-scale mapping exercises based on structural indicators and has been noted in previous work on undergraduate palliative care education.[17] This reflects a deliberate analytical sequencing. If PC is considered a core competency for all health professionals, universal exposure during undergraduate training is a necessary precondition for any subsequent discussion of educational quality and effectiveness. A parallel analysis of undergraduate palliative care education in nursing was conducted using equivalent Atlas indicators. Given the structural heterogeneity of nursing training across Europe–encompassing diploma, bachelor, and master-level programmes within markedly different regulatory traditions–the nursing findings merit a dedicated discipline-specific analysis and will be reported in a separate publication.

Encouragingly, progress in undergraduate PC education is no longer confined to a small group of Western European countries with long-established traditions. Several countries in Central and Eastern Europe now report high or near-universal coverage, suggesting a broader diffusion of PC education across the continent. Even in countries that have not yet achieved full coverage, the direction of travel is evident, with many now ensuring compulsory teaching for a clear majority of students.

At the same time, these patterns raise necessary questions. Despite longstanding international recommendations and growing societal demand, undergraduate PC education is still not universally embedded within university curricula. Institutional inertia, competition for curricular space, and entrenched disciplinary hierarchies continue to limit uptake. Claims that PC is "already covered" within existing courses often overlook the specific clinical, ethical, and communicative competencies that require intentional teaching by trained professionals with direct experience. The limited number of full professorships in PC further constrains integration,[18] as the absence of stable academic positions restricts participation in curriculum governance and institutional decision-making.

A distinctive contribution of this study is its explicit examination of the association between national regulatory frameworks and undergraduate PC education. This question emerged inductively from the narrative

Country	Medicine: schools with mandatory PC teaching (%)[a]	Medicine: mandatory teaching (n/N)	Full professors of palliative care (2025)	National regulatory framework[b]
Finland	100	(5/5)	4	NBR
France	100	(36/36)	0	BR
Germany	100	(40/40)	14	BR
Hungary	100	(4/4)	0	BR
Ireland	100	(6/6)	1	NBR
Latvia	100	(8/8)	1	BR
Lithuania	100	(2/2)	0	BR
Luxembourg	100	(1/1)	0	BR
Malta	100	(1/1)	0	BR
Moldova	100	(1/1)	0	NR
Montenegro	100	(1/1)	0	NR
Netherlands	100	(8/8)	15	BR
Norway	100	(4/4)	6	BR
Tajikistan	100	(2/2)	0	NR
United Kingdom	100	(46/46)	35	BR
Czech Republic	87	(7/8)	0	NBR
Switzerland	80	(4/5)	5	BR
Belarus	79	(15/19)	0	NBR
Austria	75	(6/8)	4	BR
Portugal	75	(6/8)	0	NBR
Sweden	71	(5/7)	5	NR
Azerbaijan	50	(1/2)	0	NR
Poland	50	(0/10)	5	BR
Romania	50	(6/12)	4	BR
Spain	43	(23/53)	3	NBR
Croatia	40	(2/5)	3	BR
Cyprus	33	(1/3)	1	NR
Israel	33	(2/6)	1	NBR
Italy	33	(13/39)	2	NBR
Serbia	17	(1/6)	0	NR
Georgia	16	(6/38)	2	NR
Belgium	14	(1/7)	2	NR
Russian Federation	10	(5/50)	4	NR
Kyrgyzstan	2	(2/20)	0	NR
Albania	0	(0/2)	0	NR
Armenia	0	(0/7)	0	NR
Bulgaria	0	(0/6)	1	NR
Denmark	0	(0/3)	6	NR
Estonia	0	(0/1)	0	NR
Greece	0	(0/7)	1	NR
Iceland	0	(0/1)	0	NBR
Kazakhstan	0	(0/10)	0	NR
Kosovo	0	(0/1)	0	NR
Monaco	0	(0/0)	0	NR
North Macedonia	0	(0/3)	0	NR
Slovakia	0	(0/3)	0	NR
Slovenia	0	(0/2)	0	NR
Türkiye	0	(0/98)	0	NR
Turkmenistan	0	(0/1)	0	NR
Ukraine	0	(0/16)	0	NR
Uzbekistan	0	NA	0	NR

(Table 1 continues on next page)

Country	Medicine: schools with mandatory PC teaching (%)[a]	Medicine: mandatory teaching (n/N)	Full professors of palliative care (2025)	National regulatory framework[b]
(Continued from previous page)				
Andorra	NA	(0/0)	0	NR
Bosnia and Herzegovina	NA	NA	0	NR
Liechtenstein	NA	(0/0)	0	NR
San Marino	NA	(0/0)	0	NR

[a]Percentages refer to the proportion of undergraduate schools with compulsory palliative care (PC) teaching in each country. Fractions indicate the number of schools with mandatory teaching over the total number of schools identified (n/N). "NA" indicates that no reliable information was available or that the denominator was zero. [b]Regulatory framework categories: BR = binding national regulation mandating undergraduate PC teaching; NBR = non-binding national policy, strategy, or recommendation promoting PC teaching; NR = no identifiable national regulation addressing undergraduate PC education.

Table 1: **Mandatory undergraduate palliative care education in medicine across 55 European countries and territories, stratified by national regulatory framework.**

analysis of Atlas data, which revealed consistent differences between countries that had taken formal regulatory decisions and those that had not.

The findings show a clear association. Countries with binding regulatory frameworks mandating undergraduate PC education showed the highest median levels of compulsory teaching, although the difference from non-binding frameworks was not statistically significant. Countries with non-binding instruments, such as national strategies, policy documents, or formal recommendations, also perform substantially better than those without any identifiable regulatory framework, often ensuring compulsory education in a majority of faculties. In contrast, countries lacking regulatory references cluster at the lowest levels of coverage. These patterns indicate that regulation, even when non-coercive, matters.

This study does not establish causality. It cannot determine whether regulation precedes educational implementation or formalises changes already underway. Both pathways are plausible and likely operate in parallel. Nevertheless, the systematic co-occurrence of regulatory frameworks and higher educational coverage marks a clear direction for policy action.[19] Our findings should therefore be interpreted as hypothesis-generating and policy-relevant, rather than as evidence of causal effect.

Importantly, regulation does not imply uniformity. Europe encompasses diverse legal traditions and educational governance models, and no single regulatory approach is appropriate for all contexts. Some countries rely on parliamentary legislation, others on ministerial decrees, accreditation standards, professional bodies, or university authorities. Respect for university autonomy remains essential.[20] The key finding is not how regulation is enacted, but that the existence of an explicit framework reduces reliance on local initiative alone and helps ensure that undergraduate PC education is delivered systematically.

At the same time, closer examination of countries that have adopted national palliative care laws or equivalent high-level legal instruments reveals a critical nuance. Legislative action in itself does not automatically translate into undergraduate education mandates. Among the countries reviewed, France stands out as the only case in which binding legislation has been explicitly used to secure undergraduate PC education, achieving universal coverage across medical schools. In most other cases, parliamentary laws and high-level legal instruments prioritise service organisation, access to care, and patients' rights, while undergraduate education, when addressed at all, is deferred to postgraduate training, specialist accreditation, or non-binding policy frameworks. From a governance perspective, this suggests that the opportunity to structurally secure undergraduate PC education at the most formative stage of professional training is often not fully seized.

The symbolic and political significance of regulation therefore deserves particular attention. In several European countries, PC has been given the force of law, signalling its recognition as a societal priority and, in some cases, as a right of citizens. Even when

Discipline	Regulatory framework	Countries (n)	Compulsory PC education coverage (%), median (IQR)	Kruskal–Wallis p; Significant post-hoc differences (Mann–Whitney U, Bonferroni-adjusted)
Medicine	Binding regulation (BR)	15	100 (77.5–100)	
Medicine	Non-binding regulation (NBR)	9	75 (33–87)	
Medicine	No regulation (NR)	25	0 (0–17)	
Medicine—overall	—	49	—	**$p < 0.001$ ($H = 22.63$); post-hoc: BR > NR ($p < 0.001$), NBR > NR ($p = 0.021$)**

Note. Percentages refer to the proportion of undergraduate schools with compulsory palliative care (PC) teaching in each country. Summary statistics are reported as median (interquartile range, IQR) across countries within each regulatory group. Countries with missing mandatory PC coverage (reported as NA) were excluded from the analysis. Countries classified as 'Other PC Regulation without undergraduate reference' were excluded from inferential comparisons. Between-group differences were tested using the Kruskal–Wallis test. Post-hoc pairwise comparisons were performed using Mann–Whitney U tests with Bonferroni correction; only statistically significant comparisons are listed.

Table 2: **Coverage of compulsory undergraduate palliative care education in medicine by national regulatory framework.**

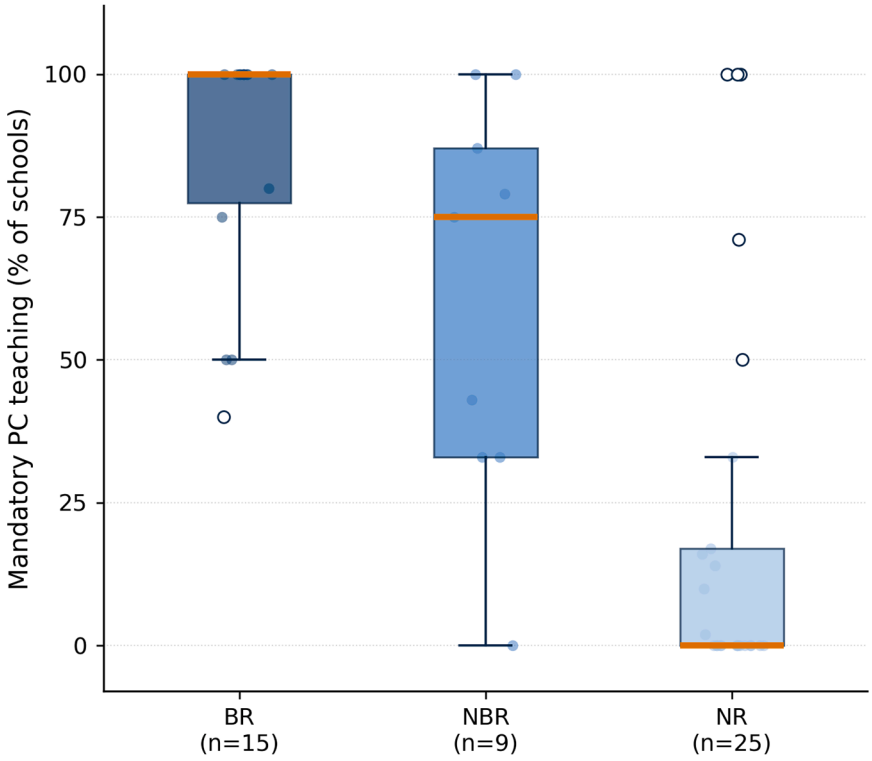


Fig. 2: Distribution of compulsory undergraduate palliative care teaching in medical schools by national regulatory framework across 55 European countries (2025).

Country	Regulatory approach illustrated	Illustrative regulatory formulation	Observed educational implementation
France	Binding regulation	France has a standalone national palliative care law (Claeys–Leonetti Law, 2016) that explicitly mandates the inclusion of palliative care in undergraduate medical education. Article 7 assigns responsibility to hospital–university centres to ensure palliative care is incorporated into initial training. This obligation is reinforced by ministerial decrees specifying curricular content.	Compulsory undergraduate palliative care teaching is implemented nationwide in medicine. All medical faculties include mandatory palliative care content, resulting in full national coverage and limited inter-university variability.
Hungary	Binding regulation	Hungary has no standalone national palliative care law. Undergraduate palliative care education in medicine is mandated through a national ministerial regulation issued in 2004, requiring palliative care to be included as a compulsory, cross-cutting component within undergraduate medical curricula. This requirement is supported by national professional guidelines developed with public health authorities.	All medical faculties include compulsory palliative care teaching, typically integrated within core subjects such as oncology or family medicine rather than as a standalone course. Coverage is universal at undergraduate level in medicine, although depth and teaching hours vary across universities.
Portugal	Non-binding regulation	Portugal has a national palliative care law (Law No. 52/2012, amended 2018) that does not regulate undergraduate education. Undergraduate palliative care teaching is promoted through explicit but non-binding national instruments, notably the Strategic Plan for Palliative Care 2017–2018, national accreditation frameworks, and professional body guidance recommending curricular integration.	Undergraduate palliative care education is heterogeneous. Several medical faculties offer compulsory components, either as standalone modules or integrated teaching, while others rely on optional courses, resulting in uneven national implementation.
Finland	Non-binding regulation	Finland has no national palliative care law regulating undergraduate education. Teaching is guided by national curriculum recommendations and quality guidelines issued by the Ministry of Social Affairs and Health, which promote the inclusion of palliative care competencies but are not legally binding for universities.	Undergraduate palliative care teaching is almost universal in medicine. All faculties follow national recommendations, resulting in high and consistent coverage, typically through integrated compulsory teaching rather than standalone courses, with relatively limited variation between institutions.

These four countries are presented as illustrative examples of the regulatory types identified in the quantitative analysis. They are not formally constituted case studies and do not represent a separate analytical component of the study design. Selection was purposive, intended to show how binding and non-binding regulatory approaches are translated into undergraduate curricula in practice.

Table 3: **Selected national examples illustrating regulatory approaches to undergraduate palliative care education in Europe (not constituting a formal case-study design).**

educational provisions are not strictly binding, such legislation establishes normative expectations that PC, and its teaching, matters. This trend reflects a broader reframing of PC as a core component of health systems and professional competence.

Taken together, these findings suggest that universal undergraduate PC education is not only an educational challenge, but also a governance challenge. Governments, institutions, and professional bodies have multiple legitimate pathways to act. What this study offers is not a prescription, but evidence that regulatory engagement, adapted to national contexts and respectful of university autonomy, is associated with more equitable and systematic educational provision, and that explicit attention to undergraduate education within these frameworks may be decisive in achieving universal coverage.

Several limitations should be acknowledged. Despite harmonised indicators and multiple verification steps, a residual risk of inaccuracy cannot be excluded. Reported figures on the proportion of universities providing compulsory or optional PC education may differ from the actual situation in individual countries, for example due to recent curricular changes or the inclusion or exclusion of a small number of faculties. A further methodological limitation is that the analysis compares country-level percentages without weighting by the absolute number of medical schools. As a result, a country with a single faculty carries the same analytical weight as a country with forty. This approach reflects the country as the unit of analysis and is consistent with the comparative, policy-oriented scope of the study, but it means that aggregate European estimates should not be interpreted as representing the proportion of individual students or institutions affected across the continent.

Second, the study assesses the extent of undergraduate PC education but not its quality, content, or outcomes. This focus reflects a deliberate analytical choice: universal exposure is a prerequisite for subsequent evaluation of educational effectiveness.

Third, the use of full professorships as the sole indicator of academic capacity is also a recognised limitation; sub-professorial academic positions, which often carry a substantial share of undergraduate teaching, were not captured in the Atlas dataset used.

Fourth, the analysis of regulatory frameworks across more than 50 countries entails inherent challenges. Legal and policy documents originate from diverse governance traditions, and this study does not claim the depth of specialised juridical analysis required to capture all nuances of enforceability or legal interpretation. It is also possible that some relevant non-binding documents were not identified. Finally, the pan-European scope, while enabling comparative analysis, necessarily limits the granularity achievable in country-specific studies. National stakeholders remain best placed to validate and contextualise findings within their own systems.

Conclusion

These findings indicate that undergraduate PC education in Europe is advancing, but remains incomplete and uneven. A growing proportion of countries now ensure that most future doctors receive compulsory training, yet universal provision has not been achieved. This study also suggests that countries with regulatory engagement tend to report broader and more systematic undergraduate palliative care coverage in medicine, though the cross-sectional design precludes causal inference. Regulation, in this broad sense, appears to have a clear payoff. While respecting university autonomy and national diversity, governments and representatives of citizens have both the legitimacy and responsibility to send an unequivocal message: palliative care education is not optional or negotiable, but a core requirement aligned with societal needs and fundamental professional values. Future research should assess whether the components of undergraduate palliative care education that are most widely implemented translate into measurable benefits for patients and families.

Contributors

- C.C., E.G., S.K., and B.L. conceived the study and led its analytical framework.
- C.C. and E.G. coordinated the Atlas indicators and oversaw data validation.
- L.M. and T.C. conducted the analysis of national regulatory frameworks and relevant legal instruments.
- G.C. and I.C. contributed to data verification and country-level synthesis.
- C.C. performed the statistical analyses with AI-assisted computation and verified the results against the country-level data; J.C. contributed to data interpretation.
- All authors contributed to drafting or critically revising the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

Data sharing statement

The country-level educational indicators used in this study are derived from the EAPC Atlas of Palliative Care in Europe 2025 (Garralda E et al., Pamplona: EUNSA, 2025) and are available from the corresponding author upon reasonable request, subject to the data governance policies of the ATLANTES Global Observatory. Country-level narrative syntheses and the documentary sources used for regulatory classification are provided in the Supplementary material. No individual-level data were collected or used in this study.

Editor note

The Lancet Group takes a neutral position with respect to territorial claims in published maps and institutional affiliations.

Declaration of interests

The authors declare no competing interests.

Acknowledgements

We thank the national palliative care consultants working with the ATLANTES Global Observatory who contributed data to the EAPC Atlas of Palliative Care in Europe 2025 and the Global Map of Palliative Care 2025. We also thank Jesús Fernando López Fidalgo for his statistical advice.

During the preparation of this work, the authors used generative AI and AI-assisted tools (ChatGPT, Claude, Perplexity, Gemini, and Open Evidence) to support document identification, text extraction, statistical computation, figure generation, and language refinement. The inferential analyses (Table 2) and Fig. 2 were re-run directly from the country-level data reported in Table 1 using a documented, reproducible script. After using these tools, the authors reviewed and edited the content as needed and took full responsibility for the content of the published article.

This study is a secondary analysis of previously collected data from the EAPC Atlas of Palliative Care in Europe 2025. No primary data collection from individual participants was conducted for the present analysis. Ethics approval (Project 2023.055, CEI-UNAV; Acta 13 April 2023), voluntary participation, electronic consent procedures, and contribution of aggregated country-level data by national informants refer to the parent Atlas study, within which the dataset used here was originally generated.

Sex and gender disaggregated analysis is not applicable to this study, which uses country-level aggregate indicators rather than individual-level data. National expert informants contributed institutional and policy data; their individual demographic characteristics were not recorded. Race and ethnicity data were not collected, as the unit of analysis in this study is the country rather than individual participants.

This work was co-funded by the European Union under Grant Agreement no. 101183265—Joint Action JANE-2. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or HaDEA. Neither the European Union nor the granting authority can be held responsible for them. The work was conducted within the ICS-ATLANTES Global Observatory of Palliative Care.

The ICS–ATLANTES Global Observatory received funding from Fundación 'la Caixa', Fundación Científica Ramón Areces, Fundación Lontano, Fundación Carolina, The True Colours Trust, and private donors. T.C. received additional support from the Finnish Cultural Foundation and the Orion Research Foundation.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.lanepe.2026.101871.

References

1 World Health Organization. *Strengthening of palliative care as a component of comprehensive care throughout the life course. WHA67.19*. Geneva: WHO; 2014.
2 Council of Europe. *Recommendation Rec(2003)24 of the Committee of Ministers to member states on the organisation of palliative care*. Strasbourg: Council of Europe; 2003.
3 Parliamentary Assembly of the Council of Europe (PACE). *The provision of palliative care in Europe*. Resolution 2249 (2018). Strasbourg: Council of Europe; 2018.
4 Elsner F, Centeno C, Cetto G, et al. *Recommendations of the European Association for Palliative Care (EAPC) for the development of undergraduate curricula in palliative medicine at European medical schools*. Milano: EAPC; 2013.
5 Mason SR, Ling J, Stanciulescu L, et al. From European Association for Palliative Care recommendations to a blended, standardized, free-to-access undergraduate curriculum in palliative medicine: the EDUPALL Project. *J Palliat Med*. 2020;23(12):1571–1585.
6 Ferrell B, Malloy P, Mazanec P, Virani R. CARES: AACN's new competencies and recommendations for educating undergraduate nursing students to improve palliative care. *J Prof Nurs*. 2016;32(5):327–333.
7 Vindrola-Padros C, Mertnoff R, Lasmarias C, Gómez-Batiste X. Palliative care education in Latin America: a systematic review of training programs for healthcare professionals. *Palliat Support Care*. 2018;16(1):107–117.
8 Centeno C, Sitte T, de Lima L, et al. White paper for global palliative care advocacy: recommendations from a PAL-LIFE Expert Advisory Group of the pontifical academy for life, Vatican City. *J Palliat Med*. 2018;21(10):1389–1397.
9 Sullivan AM, Lakoma MD, Block SD. Training in end-of-life care: a public health crisis. *J Gen Intern Med*. 2003;18(9):685–695.
10 Cardona-Morrell M, Kim JCH, Turner RM, Anstey M, Mitchell IA, Hillman K. Non-beneficial treatments in hospital at the end of life: a systematic review on extent of the problem. *Int J Qual Health Care*. 2016;28(4):456–469.
11 Carrasco JM, Lynch TJ, Garralda E, et al. Palliative care medical education in European universities: a descriptive study and numerical scoring system proposal for assessing educational development. *J Pain Symptom Manage*. 2015;50(4):516–523.e2.
12 Garralda E, Tripodoro VA, Ling J, et al. *EAPC Atlas of Palliative Care in the European Region 2025*. Pamplona: EUNSA; 2025.
13 Clelland D, van Steijn D, Whitelaw S, Connor S, Centeno C, Clark D. Palliative care in public policy: results from a global survey. *Palliat Med Rep*. 2020;1(1):183–190.
14 Foss L, Caraceni A, Centeno C, et al. EU joint action: integrating palliative care in the EU cancer agenda: insights from JANE-2. *J Pain Symptom Manage*. 2026. https://doi.org/10.1016/j.jpainsymman.2026.02.009.
15 Bastos F, Tripodoro VA, Montero A, et al. Empowering African professionals to assess palliative care development: regional application of the WHO framework. *BMJ Glob Health*. 2025;10(10):e020623. https://doi.org/10.1136/bmjgh-2025-020623.
16 Tripodoro VA, Fidalgo JFL, Pons JJ, et al. First-ever global ranking of palliative care: 2025 World Map under the new WHO framework. *J Pain Symptom Manage*. 2025;70(5):447–458. https://doi.org/10.1016/j.jpainsymman.2025.07.026.
17 Pieters J, Dolmans DHJM, van den Beuken-van Everdingen MHJ, Warmenhoven FC, Westen JH, Verstegen DML. A national palliative care competency framework for undergraduate medical curricula. *Int J Environ Res Public Health*. 2020;17(7):2396.
18 Gibbins J, McCoubrie R, Maher J, Forbes K. Incorporating palliative care into undergraduate curricula: lessons for curriculum development. *Med Educ*. 2009;43(8):776–783.
19 Nousiainen M, Scheele F, Hamstra SJ, Caverzagie K. What can regulatory bodies do to help implement competency-based medical education? *Med Teach*. 2020;42(12):1369–1373.
20 Aftab W, Khan M, Rego S, et al. Variations in regulations to control standards for training and licensing of physicians: a multi-country comparison. *Hum Resour Health*. 2021;19(1):91.