

Exploring beliefs among Central European anatomists around the concept of quality in medical education: Exposing three common myths through the Erasmus+ LEANbody project

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Abstract:

Context

Over recent decades, Central European medical schools have provided English-language medical education for international students. The establishment of the World Federation for Medical Education (WFME) in 1972 introduced an accreditation system for medical schools to ensure high quality in medical education. This has motivated the leadership in Central European universities to re-evaluate their long-established teaching traditions in the process of applying for WFME recognition. A needs analysis conducted in 2021 among Central European anatomists uncovered three prevalent myths: (a) High failure rates in anatomy examinations indicate the high quality of the medical programme; (b) Most students cannot excel in anatomy due to the difficulty of the subject, quality of the teaching programmes or their own cognitive abilities; and (c) The main role of anatomists is to deliver academic content whereas helping students to develop their professional skills and attitudes is less important.

Methods

In October 2021, the European Union-funded Erasmus+ LEANbody project was established to explore these beliefs in detail through surveys and feedback questionnaires distributed to participants, as well as delegates at workshops and national conferences throughout a three-year period. Project partners comprised anatomists at three Central European medical schools: University of Zagreb (Croatia), Masaryk University (Brno, Czech Republic), and University of Pécs (Hungary), along with anatomists at the University of Cambridge (UK) and educational developers from the Karolinska Institute (Sweden).

Conclusions

This paper provides evidence that these myths do exist, exposes their fallacy, and suggests solutions for the challenges faced by Central European anatomists as they re-evaluate their teaching traditions and embrace novel teaching methods.

Introduction

For students considering university courses, a medical degree remains a popular choice worldwide. The medical profession is appealing as it provides opportunities for graduates to work in a fast-paced, multidisciplinary environment while helping patients to recover and lead healthy lives (1, 2). There is also an increasing need for well-trained doctors internationally. The global healthcare workforce faces projected shortages and maldistribution of physicians, with the World Health Organisation (WHO) reporting an estimated shortfall of 10 million health workers by 2030 (3).

Applications to reputed medical schools is highly competitive due to limited places and stringent criteria. Currently, the World Directory of Medical Schools lists over 4,000 medical schools, with varying curricula, resources and course duration (4). This variability necessitates quality assurance and standardisation to ensure patient safety and maintenance of ethical standards. The World Federation

for Medical Education (WFME), a non-governmental organisation founded in 1972 by the World Medical Association (WMA) and WHO, aims to ensure high quality in medical education worldwide (5).

Since the 1980s, Central European medical schools have provided English-language medical education for international students. From 2004 onwards, this has become a European Union (EU) funded strategic business, producing large numbers of doctors annually. While accreditation of medical schools is typically conducted by national agencies, such as the General Medical Council in the UK, the accreditation offered by the WFME ensures that medical education meets globally recognised standards. In Central Europe, this has motivated university leadership to re-evaluate their teaching traditions as their medical schools consider applying for WFME recognition.

The concepts within WFME standards derive principles that characterise modern Western higher education. However, leaders of Central European medical schools received their own education, both secondary and tertiary, within more traditional systems. This discrepancy may result in a defensive attitude, as WFME descriptors may differ considerably from their previous experiences. It may be easier to avoid serious and transformative thinking concerning long-held teaching methods and attitudes. Nevertheless, the process involved in earning WFME accreditation provides opportunities to challenge deep-seated misconceptions, thereby improving the quality of medical education and raising the reputation of their international programmes.

This paper explores prevalent beliefs around the concept of quality in medical education among the leadership of Central European medical schools, focusing on one discipline – human anatomy. While anatomy education is a key component of all medical curricula, its failure rates are highest within the medical course (6). Our observations are derived from the EU-funded LEANbody collaborative project from 2021-2024 (7). Partners comprised anatomists at three Central European medical schools – University of Zagreb (Croatia), Masaryk University (Brno, Czech Republic), and University of Pécs (Hungary), along with anatomists at the University of Cambridge (UK), and educational developers from the Karolinska Institutet (Sweden).

The initial needs analysis conducted among 69 Croatian, Czech, and Hungarian anatomists uncovered three misconceptions around global educational standards. These were explored in depth through interactive sessions, structured interviews, and focused workshops about teaching traditions on anatomy, professionalism, student-centred pedagogy, and WFME standards. After presentations at national conferences, feedback was collected from anatomists from Croatia, Czech Republic, Hungary, Serbia, Slovakia, and Slovenia. We first present the evidence for the existence of these myths among Central European anatomists. Such claims are then shown to be fallacious, and suggestions made for solutions to the challenges that such beliefs may pose towards attempts at improving the quality of anatomical education.

Three Common Myths

1. High failure rates in anatomy examinations indicate the high quality of the medical programme.

In our study, 69% of Hungarian, 50% of Czech, and 10% of Croatian anatomists admitted that high failure rates in anatomy examinations were a reality in their local contexts (S1). Specifically, the percentages of international students passing at their first attempts were 37%, 42% and 60% in the University of Pécs (Hungary), Masaryk University (Czech Republic) and University of Zagreb (Croatia) respectively (S2). Regarding students who passed with “good”/“excellent” grades at their first attempts, these percentages were 18% (Pécs), 29% (Masaryk), and 18% (Zagreb) (S2). Thus, in Central European medical schools, the percentage of students failing at their first attempts could be as high as 63%, and of those who passed, only 30% achieved “good” grades or above according to local standards. In

contrast, the pass rate for all University of Cambridge students was 96%, with >65% having “good”/“excellent” grades.

In conjunction with the above, Central European anatomists believe that such high failure rates reflect the high quality of their programme. In our surveys, 18% affirmed this explicitly (26% Hungarian, 12% Czech and 10% Croatian anatomists “agreed”/“tended to agree”), while 20% were undecided (10% Hungarian, 31% Czech, and 25% Croatian anatomists (S1). These results show that 38% of Central European anatomists are unsure of the relationship between failure rates in their anatomy courses and the quality of their programmes (36% Hungarian, 43% Czech, and 35% Croatian).

When asked whether they could provide high-quality anatomy teaching for their students which could result in low failure rates, 52% responded positively (S1). While this was so for all three countries, compared with Hungarian anatomists, Croatian and Czech anatomists affirmed their competence more confidently, choosing “agreed” over “tended to agree”: 10%, 25%, and 30%, respectively.

The WFME developed quality management in medical education around the framework of student-centred pedagogy. Regarding the statement, “I know how to manage quality in the framework of student-centred pedagogy”, <20% agreed for all countries. Positive responses were <10% in Hungary, and only <3% of respondents chose the most confident “I agree” option (S1). However, when 50 Hungarian anatomists were asked about their collective perception of these competencies among themselves (S3), 67% believed that >40% of their colleagues were competent in quality management within the framework of student-centred pedagogy, with 28% considering that >60% of their colleagues were competent. These results contrast sharply with the reality that many fewer (<10%) Hungarian anatomists admitted to feeling competent in quality management around the framework of student-centred pedagogy (S1). Hence, only 8% of respondents had a realistic perception about the collective competence of Hungarian anatomists in this domain (S3).

The above results confirm that the myth of high failure rates of anatomy examinations being an indicator of high quality in medical education is prevalent among Central European anatomists. In addition, the level of competence in quality management within the framework of student-centred pedagogy is very low among this same group. These false beliefs must be challenged and re-evaluated to enable the failure rates in their anatomy courses to be comparable with much lower rates in high-ranking medical schools worldwide.

2. Most students cannot excel in anatomy due to the difficulty of the subject, quality of the teaching programmes, or their own cognitive abilities.

Our survey revealed that over half (53%) of 69 Central European anatomists agreed or tended to agree that high-quality learning was the privilege of only the most able students (Figure 1). Specifically, 55% of Hungarian, 59% of Czech, and 48% of Croatian anatomists believed this, with only 10% disagreeing completely (S1). Furthermore, 43% of respondents indicated that high failure rates might reflect sociocultural or cognitive disadvantages among students (S1). While anatomy is recognised as a demanding subject regarding the volume of information a student needs to learn and its application in clinical contexts (8), mastering such knowledge does not require abstract or conceptual reasoning skills.

The teacher’s role is of utmost importance. It is commonly assumed that anatomy is difficult due to the extensive volume of content being delivered according to Central European traditions. Over 65% of respondents indicated that conveying a substantial amount of information was essential or important, with 88% stating that content delivery was crucial (S4). To be effective, teaching must break down complex content into manageable segments and emphasise its clinical relevance to maintain student

motivation. It is notable that only 52% of respondents indicated that they were confident in their ability to provide high-quality anatomy learning for their students, which would decrease failure rates. These results are significant, as 44 of the 69 respondents have taught anatomy for over 10 years (S1).

While most respondents (82%) indicated that dropout rates could be reduced through quality management of learning processes (S4), only 26% were aware of the concept of student-centred pedagogy. Among Croatian anatomists, 57% knew about this, while 77% of Hungarian and 88% of Czech respondents were unfamiliar with it. The number of years of education was not related to this response (S1). In another survey exploring the collective beliefs of Hungarian anatomists, only 33% indicated that <40% of their colleagues could perform quality management within student-centred pedagogy (S3). These results may reflect the fact that most university instructors had not undergone any pedagogical training and were incognizant of novel methodologies, tending to rely on their intuition or personal experiences when they were students.

The above results show that Central European anatomists have a tradition of providing comprehensive content to their students. However, while student-centred pedagogy is well-established in Western universities, Central European cultures tend towards a teacher-centred approach. As many anatomists are unfamiliar with a student-centred approach, they adhere to the fallacious belief that only a minority of students can excel in anatomy.

3. The main role of anatomists is to deliver academic content, whereas helping students to develop professional skills and attitudes is less important.

There is a general belief among anatomists that their main task is to teach students only what is contained within the curricula. Anatomists are not expected to highlight elements of professionalism, including the students' values, attitudes or behaviours, or the use of appropriate social interactions in their training and future work. However, this misconception has been challenged in the literature (9).

In our survey, 90% of Central European anatomists believed it was essential for students to develop their own attitudes during their studies, with 81% indicating that teachers, especially anatomists, should assist students in this process. Specifically, 81% of Hungarian, 94% of Czech, and 71% of Croatian anatomists stated that anatomy teachers should play a role in helping students develop their attitudes. However, only 46% of anatomists believed that student attitudes should be assessed, and only 38% claimed to be aware of the appropriate methodology for doing so (S1). This concurred with the finding that only 20% of Hungarian anatomists thought that >60% of their colleagues were convinced that the attitude development of students should be measured (S3). Despite anatomists being inclined to assess these attitudes, the majority confessed to lacking the knowledge and ability to do so effectively.

When the LEANbody project partners were surveyed (S4), 89% agreed that professional management of attitude development was important or essential. Additionally, 94% indicated that engagement of all international students in this process was important or essential. Among project participants, therefore, anatomists did see their role as extending beyond teaching anatomy to encompassing the development of students' professional attitudes.

A subsequent survey indicated that respondents agreed that students should receive training from anatomists on the principles of preserving life (75%), restoring wellbeing (67%), improving health conditions (75%), accurately diagnosing health conditions (75%), and professional communication of health conditions (95%) (S5). These results show that anatomists do have a significant contribution to make to medical education, not only in content delivery but also in providing role models for students on how they should interact with patients and colleagues professionally.

Anatomists are highly qualified professionals, but the majority may not have received pedagogical training. While most anatomists do consider that they have an important role to play in developing students' professional attitudes and skills, they have not been trained to measure these objectively. It is untrue that anatomists do not have time or do not care about students' professional attitudes or development of soft skills, and it is never too early for students to begin acquiring such skills. The LEANbody project aims to provide these much-needed tools to enable anatomists to assist students in developing professional skills, attitudes, and behaviours, while teaching them the knowledge required to practise safely.

Discussion

The EU-funded Erasmus+ LEANbody project was established based on a needs analysis which indicated a lack of knowledge about global standards in medical education. Some of the survey questions also revealed common assumptions that were still held by Central European anatomists about the quality of medical education (Figure 1), the ability of students to excel in examinations, and the role of anatomists in professional skills development.

Considering the first myth, while the causes of high examination failure rates are multifactorial, some of the most important contributors to attrition concern the medical schools, including curriculum design and delivery (10). Student attrition has a significant effect on the institution's reputation, on society at large, and on the students themselves (11). Teachers must understand the causes of student dropout in order to introduce preventative measures. Many students consider anatomy to be the most difficult course in the curriculum. From the students' perspective, psychological and mental health factors play key roles in decreased academic performance and subsequent attrition (12). Adequate provision of mental health support services should therefore be a crucial consideration, rather than merely focusing on content delivery.

In the second myth, attributing high failure rates to the difficulty of studying anatomy and the cognitive inability of students is a gross oversimplification. Factors such as academic preparation, teaching methods, early support, course structure, and student engagement are significant contributors in determining student success. While the volume of detailed information may be demanding in terms of memory load, anatomy is not intrinsically difficult to understand and body structures are familiar to the student. Hands-on cadaveric dissection, which is the main teaching method in Central European medical schools, have the advantage of assisting students in spatial visualisation, especially for those with kinaesthetic learning styles. The use of interactive, engaging teaching methods, and implementing constructive alignment should enable most students to attain good or excellent grades in anatomy.

Regarding the third myth, project participants already agree that anatomists should assist in the professional development of students, with their role extending beyond content delivery. Despite recognising the importance of professionalism and that it can be taught within the anatomy course, respondents found it difficult to specify how this could be integrated into the curriculum, and did not know how it could be assessed. Central European medical schools tend to focus on hard skills, such as the acquisition of factual knowledge, with an over-emphasis on detail rather than clinical applications. Students thus possess a lot of information but lack soft skills that are crucial in clinical practice. We believe that such soft skills, including communication, teamwork, leadership, problem solving, critical thinking, work ethic and social awareness, can be developed effectively within an anatomy course. As anatomy is always taken as a foundational subject in any medical course, anatomists are well placed to assist students in developing these skills.

During the three-year period of the project, participants from Central European medical schools were exposed to the principles of student-centred pedagogy, including concepts such as constructive alignment, the development of professional values, attitudes and behaviours, and the importance of mental health support services for staff and students. Through attendance at interactive sessions, seminars and workshops, anatomists were able to apply what they had learnt to their own practice in their home institutions. Their testimonials about the participation in the LEANbody project as well as all teaching tools, survey results (S1-S5), a Guidebook, and an EDUC (European Digital UniverCity) Moodle course will be freely available through the project website (7). It is hoped that the changes that are being made will be reflected in lower failure rates, improved student performance, and intentional development of professional attitudes, skills, and behaviours within anatomy courses globally.

Conclusion

This paper has provided evidence for the existence of three prevalent misconceptions based on data from surveys that were completed by anatomists in Central European medical schools. These questionnaires formed part of a collaborative project coordinated by the University of Pécs in Hungary, and included anatomists from Masaryk University in Brno, Czech Republic, the University of Zagreb in Croatia, and the University of Cambridge, UK. Educational developers from the Karolinska Institutet, Sweden, provided invaluable advice on student-centred pedagogy and constructive alignment. The project has enabled us to expose these myths as fallacious beliefs, and our hope is that the tools provided by the LEANbody project will assist anatomists throughout Central Europe and beyond to further refine and improve their courses. The eventual goal is to produce medical graduates who are able to serve their communities safely and effectively, while upholding the highest professional standards of clinical practice.

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Conflict of interest statement

None of the authors have a conflict of interest to disclose.

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Figure 1. Highlights of our analysis of beliefs of Central European anatomists about teaching and learning Anatomy. Results of our surveys shown as percentages of opinions ('agree', 'lean to agree', 'can't decide', 'lean to disagree', 'disagree') of 69 Central European anatomists about highlighted statements (statements no. 5.6-5.9 of the S1 survey in the Supplement of this manuscript).

