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An exploration of culturally exclusive and outdated medical terminology: Are they suitable for students from non-English backgrounds?

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Abstract

Introduction: English is the main medium of medical education in many institutions worldwide. However, several terms in the medical lexicon carry colonial, cultural, or linguistic origins that may be outdated or confusing for students from non-English-speaking backgrounds. This study explores culturally exclusive and outdated metaphorical terms in medicine and debates their continued usage.

Methods: A two-stage protocol was followed. First, textbooks and teaching material from the pre-clinical phase of the medical curriculum at the authors' institution were screened for metaphorical medical terms with outdated concepts or Anglo-European cultural elements. Next, the definitions and origins of each term were explored using open-source etymological resources and peer-reviewed literature from PubMed and Google Scholar. Terms were then thematically grouped and narratively analysed.

Results: Twenty Anglo-European references were identified and categorised into sub-themes: Western food (e.g., "port-wine stain," "maple syrup urine disease"), fiction (e.g., "Alice-in-Wonderland syndrome"), religion (e.g., "Hand of Benediction"), and foreign languages (e.g., "café-au-lait spots," "tache noire"). These may be unrelatable to students from diverse cultural or religious backgrounds. In addition, ten obsolete societal references were noted (e.g., "Washerwoman's hands," "rugger jersey spine," "Indian file pattern"), which are no longer part of common knowledge.

Conclusion: While such terms aided understanding for Anglo-European learners, they may now burden today's diverse student population. Medical educators should reassess their continued use to ensure clarity and equity in global medical education. This review, based on single institutional findings, provides a foundation for broader, multi-institutional studies to explore the prevalence and impact of these terms across curricula.

Keywords: *Medical Terminology, Equity in Medical Education, Colonialism in Medicine, Obsolete Medical Terms, Global Medical Education*

Practice Highlights

- Several medical metaphors are based on culturally exclusive and outdated references.
- Many metaphorical terms require knowledge of Anglo-European history, culture, or religion.
- Some metaphors refer to societal elements or occurrences that are no longer common knowledge.
- Such metaphors would be meaningless to students who do not understand their relevance.
- Learning these outdated terms intended to simplify medicine would now be an additional burden.

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I. INTRODUCTION

Medicine is an extremely challenging and complex program of study (Davis & Harden, 2003; Ogden et al, 2023; Woodruff, 2019) and many medical undergraduates face numerous difficulties in mastering the program, especially during the early years of the course (Kirtchuk et al, 2022; Malau-Aduli BS et al, 2020). Amidst the countless hours of study, clinical rotations, and immersive learning experiences, medical students are also expected to acquire a robust vocabulary of medical terms that enables them to comprehend, communicate, and apply complex medical concepts. Language has been identified as one of the main challenges in medical education programs. (Tayem et al, 2020) Since most institutions deliver their medical programs in English, there is a high expectation of English language proficiency among medical entrants (Chan et al, 2022; Hayes & Farnill, 1993; McLean et al, 2013). English has been considered as a barrier for understanding basic medical disciplines among non-native English-speaking students (Bendriss & Bendriss, 2015; Lucas et al., 1997) and interviews with trainers have found that the deficiencies in the figurative and colloquial language affected the performance of international students even at the graduate level (Henderson et al., 2017). Although studies like Jain & Krieger (2010) and Byrne et al. (2019) highlight the linguistic and cultural adaptation struggles among medical students, they do not specifically address the difficulties in comprehending medical language.

Medical lingo is as complex as the science itself and is rife with idiosyncrasies and irregularities that can confound even native English speakers. Modern English has evolved through the influence of Greco-Roman, French, and Germanic languages. (Van der Auwera & Genee, 2002) Many medical terms, therefore, have etymological roots in Latin, Greek or French (Banay, 1948; Faure, 2018). Some terms are often shaped by scientific advancements and technological innovations, and quite a number of them are eponymous references to a person or persons who described a particular phenomenon. (Thomas, 2016; Whitworth, 2007) Similarly, some terms originate from specific cultural and linguistic nuances to English folklore, literature, and society while some others have an archaic origin or are metaphors representing a phenomenon that is non-existent or inapplicable in today's context. Many clinicians and lecturers continue to use these terms in medical education and in the authors' experience, students from non-English speaking backgrounds, tend to learn these terms without truly understanding their relevance. Although there have been concerns raised over the authenticity and appropriateness of use of eponyms in medical literature (Strous & Edelman, 2007; Whitworth, 2007; Woywodt & Matteson, 2007), however, there is very little attention given to the propriety of culturally specific and obsolete metaphorical terms in the medical lexicon. This study explores culturally exclusive or outdated metaphorical medical terms and traces their meanings and etymological origins with the aim of stimulating dialogue on whether their continued use in contemporary medical education is justifiable. Except for a few articles (Cohen et al., 2013; Gheewala et al., 2022; Torrey, 2023), no published study has systematically undertaken an exploration of the historical and cultural context of these terms.

II. METHODOLOGY

We followed a two-stage qualitative approach that combined a document analysis with an exploratory targeted search to identify and contextualise terms that were metaphors, figurative labels, or colloquial descriptions of a medical condition. This approach followed previously published strategies for mapping and contextualising terminology from medical documents (Bearman et al., 2021; Bowen, 2009; Dalglish et al., 2020).

A. Stage 1: Document Analysis

During the period from November 2023 to November 2024, all four authors screened the teaching-learning material and textbooks within the pre-clinical medical program at the authors' university. The pre-clinical curriculum is distributed within 12 modules over four semesters and delivered in the form of synchronous and asynchronous lectures, practical's, team-based learning, problem-based learning, case-based learning, and self-directed learning. Teaching-learning material for all lessons are uploaded and accessible via the university's e-learning portal, either in document form, voice-over narrations, microlearning videos, or interactive SCORM packages. We also identified the most frequently borrowed textbook within each of the six main pre-clinical disciplines through the institutional library resource utilisation data. The indices of the textbooks in anatomy (Agur et al., 2019), pathology (Rubin & Reisner, 2019), and pharmacology (Whalen, 2019) were screened by the first and second authors while physiology (Widmaier et al., 2019), biochemistry (Abali et al., 2022), and microbiology (Bauman, 2015) were screened by the other two authors.

The terms were eligible for inclusion if they met at least one of the two following criteria: 1) Anglo-European connotations – terms including Latin and French words and terms requiring knowledge of Western culture, literature or history. 2) Outdated terms – references to phenomena or practices that used to be common knowledge during previous times but are no longer

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present or rarely encountered in modern-day living. We did not collect data on the frequency of the use of the terms. We also did not screen any formative or summative assessment documents.

B. Stage 2: Contextualisation of Identified Terms

We then conducted an exploratory targeted search of the definitions, etymological origins and medical relevance of each term. We did not intend to conduct an exhaustive review based on any systematic protocol but instead focused on gathering sufficient contextual information using the term itself as a key word, or where necessary, combining them with words such as 'origin', 'history' or 'etymology'. Our sources included online open-source etymological databases, such as the online etymology dictionary (https://www.etymonline.com), Oxford reference (https://www.oxfordreference.com), the Oxford concise medical dictionary and peer reviewed publications indexed in PubMed and Google Scholar.

Terms were grouped into subcategories, and each term was then charted according to definition, medical usage, historical or etymological context and justification for inclusion. Any disagreements on the meaning of the terms or the justification for their inclusion in this study were resolved through mutual consensus among the authors.

III. RESULTS AND DISCUSSION

We identified 20 terms as Anglo-European references and 10 terms as obsolete phenomena. A summary of the terms and their medical context is given in Table 1 and is discussed in more detail below.

Category	Sub-category	Term	Medical context and Etymology
ANGLO EUROPEAN REFERENCES	*Westernised Food*	Maple syrup urine disease	The sweet smell of maple syrup is present in the urine of infants who have inherited deficiency in metabolising amino acids.
		Port-wine stain	Cutaneous haemangiomas which are the same colour as port wine.
		Red currant jelly stools	Stools in babies with intussusception have the same appearance and colour as red-currant jelly.
	Literary Works	Alice in Wonderland syndrome	A neurological condition with abnormal visual perceptions. It is named after Lewis Carroll's Alice in Adventures where Alice, the central character, sees surrounding objects in distorted shapes and sizes.
		Mad-hatter disease	Psycho-behavioural abnormalities due to chronic mercury poisoning. Such behaviours were seen in persons engaged in the manufacturing of top hats leading to the term 'as mad as a hatter'. This was also the basis for the character Mad Hatter in Alice in Wonderland.
		Lilliputian syndrome	Hallucinations where objects or people appear smaller than usual. From Jonathan Swift's Gulliver's Travels where Gulliver finds the land of miniature people who are called Lilliputians.
		Miss Havisham syndrome/ Plyushkin syndrome (also called Diogenes syndrome)	A neuropathological state of hoarding, neglect, and social withdrawal. This is based on the character Miss Havisham in Charles Dickens' Great Expectations.
		Pickwickian syndrome	Obesity-hyperventilation syndrome is based on the character of a fat and excessively sleepy coachman in Charles Dickens' Pickwick Papers.
		Rapunzel syndrome	Psychiatric abnormality of ingesting hair is based on the fairy tale character of Rapunzel who had extremely long hair.
		Othello syndrome	A state of morbid jealousy is named after the central character in William Shakespeare's play, Othello, who murders his wife due to unfound suspicions of his wife's infidelity.
	Mythology & Religion	Caput medusae	Dilated umbilical vessels in portal hypertension resembling the Greek mythological character Medusa's head.
		Hand of Benediction	Median or Ulnar nerve neuropathy of the hand giving the appearance of a Catholic priest's hand gesture during blessing.
		St. Vitus dance	Rhythmic dance-like movements seen in rheumatic chorea are named after the medieval tradition of dancing in homage to Saint Vitus.

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		Rachitic rosary	Also known as 'string of beads' appearance where the enlarged costochondral junctions are seen as a series of rounded shadows on the chest X-ray of a child with Ricketts. The rosary is a string of prayer beads used in the Christian and Catholic religions.
	Non-English Terms	Café-au-lait spots	Meaning Coffee with milk (French) given to the light-tanned skin lesions typically seen in neurofibromatosis.
		Peau d'orange appearance	Meaning Orange peel (French) – the appearance of skin manifestations in breast carcinoma.
		Tache noire	Black spot (French) – the discolouration of sclera after death.
		Linitis plastica	Meaning linen-like and non-pliable (etymology unclear) diffuse thickening of the stomach wall in gastric cancer also known as leather bottle stomach.
		Rigor mortis	Meaning stiffening after death (Latin).
		Cutis anserina	Meaning goose skin (Latin) appearance of the skin in immersed bodies.
OBSOLETE PHENOMENA		Lead pipe rigidity	Muscle tone in upper motor neuropathies resembling the feeling of bending a lead pipe.
		Rugger Jersey spine	Horizontal radio dense lines of the vertebrae resemble horizontal lines of the rugger jersey.
		Washerwoman's sign	Macerated palms and soles in immersed bodies like the appearance of the hands in a laundress.
		Indian file pattern	Lining of nuclei in invasive breast carcinoma resembling the pattern of Red Indians moving one behind another.
		Pugilistic attitude	Postmortem flexing of arms and legs after burning or putrefaction that resembles the posture of a boxer (pugilist).
		Rodent ulcer	Chronic enlarging ulcer in basal cell carcinoma that resembles a rodent bite.
		Signet ring cell carcinoma	Carcinoma of mucin-producing glandular epithelial cells where the excessive mucin pushes the nucleus to a periphery giving the appearance of a signet ring.
		Coal miner's lung	Pneumoconiosis used to be common among coal miners.
		Hay fever	Allergic rhinitis is believed to be due to exposure to hay.
		Farmer's lung/ Bird fancier's lung	Hypersensitive pneumonitis is common among farmers and bird breeders.

Table 1. Metaphors or figurative labels in medicine that are exclusively Anglo-European or refer to obsolete phenomena

A. Exclusively Anglo-European References

Among the many pathological terms that are linked to common food items, some are analogies to Western food items that are rarely consumed elsewhere. It is very unlikely that students coming from non-Anglo-European backgrounds would have seen or tasted these food items. Notable terms include, 'maple syrup urine' which refers to the specific ketotic odor of maple syrup in urine in babies with inherited deficiencies in amino acid metabolism or 'port wine stain' which refers to the colour of congenital capillary malformations in the skin. Another example is the 'red currant jelly', which is almost exclusive to English cuisine, being linked to the colour of stools in intussusception or sputum in Klebsiella. Interestingly, the term 'red currant jelly stools', although taught as a characteristic feature of intussusception, appears to have very little value in actual clinical practice (Yamamoto et al., 1997).

Metaphorical references to literary works are also quite common in medicine. Mad-hatter disease is a term referring to neuropsychiatric manifestations seen in people regularly exposed to mercuric fumes. This occupational hazard was particularly common in the top hat industry during the 16-18th century which was the basis for the common English simile, 'as mad as a hatter'. The manufacturing of top-hats using Mercury is almost nonexistent today (Crean, 1962; Martin & Kite, 2006). Therefore, this term could be considered under the obsolete category as well. Those who have read Lewis Carroll's Alice in Wonderland might probably understand its relevance better through the character of Mad Hatter. This novel is featured in another context, based on the unusual experiences of the protagonist. The term 'Alice in Wonderland Syndrome' is given to a neurological disorder that causes distorted visual perception. Similarly, Lilliputian hallucinations', a term that was coined from Jonathan Swift's Gulliver's Travels, refers to the complex visual perception of objects or people greatly reduced in size (Chand & Murthy, 2007). Several other fictional characters from Anglo-European literature have found their way into medicine. The terms, 'Miss Havisham syndrome', 'Plyushkin syndrome',

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'Diogenes syndrome' all refer to a neurological condition that manifests with social withdrawal, extreme hoarding, self-neglect and squalor. Miss Havisham is a character in Charles Dickens' Great Expectations and Plyushkin is a character in Nikolai Gogol's novel Dead Souls. Both these fictional characters were portrayed as having social isolation and hoarding tendencies. Diogenes on the other hand was a Greek philosopher who lived in the 4th Century BC and the use of his name for this condition has been criticised as his desire was to live contentedly with minimal possessions and did not display any characteristics of this syndrome (Cooney & Hamid, 1995). Several other eponyms based on fiction, such as Rapunzel, Othello, Pickwickian syndrome were identified during our search but were excluded from further exploration considering the rarity of their usage.

Aligned to fiction were numerous references to mythological characters, predominantly from Greek mythology, such as the anatomical terms, Achilles' tendon, atlas vertebra, hymen, iris, labyrinth or diseases such as nymphomania, hermaphroditism, narcissism (Lysanets & Bieliaieva, 2023). These do not require any comparative imagery for comprehension whereas, using terms like 'caput medusae' to denote the appearance of dilated veins around the umbilicus in liver failure would be meaningless to students unfamiliar with the mythological creature, Medusa. The 'Hand of Benediction' which is the neuropathological effect of hyperextension of the lateral three fingers and flexion of the medial two fingers is termed after the gesture made by Catholic priests during blessing. Similarly, the 'Rachitic rosary' refers to the rosary or string of beads used in prayer. The abnormal rhythmic movements in rheumatic chorea, now popularly known as Sydenham chorea, was given the term 'St. Vitus dance' by Sydenham himself, who compared them to the maniacal dancing epidemics in medieval Europe that were miraculously cured in the chapel of St Vitus (Park & Park, 1990). These metaphors have an exclusively Christian or Catholic origin and understanding the relevance of these terms to the clinical and radiological features would be difficult for students from other religious backgrounds.

It is well known that many scientific terms in medicine originate from Greek, Latin and other European languages. However, some metaphors and terms are distinct from these foreign languages. The terms included here are only those that intend to evoke imagery but require knowledge of the respective language to do so. Only a student who understands that café-au-lait means coffee mixed with milk could visualise the light, tan-coloured spots in neurofibromatosis. A student unfamiliar with Latin would not be able to relate the term cutis anserina to a goose skin to visualise the sign of immersion or that the French term 'tache noire' relates to a black spot. To students growing up in the UK or Europe, these terms would still be meaningful but would be too much to expect of students coming from other regions. A peculiar term that deserves mention in this category is 'linitis plastica'. This term is used interchangeably with the relatively older term 'leather bottle stomach' to denote a diffuse thickening of the stomach wall characteristically seen in signet ring cell carcinoma (Armstrong, 1914). The term has a confusing and obscure origin, which some scholars believe was coined to indicate sheets of filaments like linen (linitis) that were non-pliable (plastica) (Agnes et al., 2017).

B. References to Obsolete Phenomena

This category holds terms that refer to material or sociocultural elements that no longer exist in society. A good example of a reference to obsolete material is the 'lead pipe rigidity' described as the uniform spastic muscle tone found in upper motor neuron disorders analogous to bending a lead pipe. In the past, domestic plumbing used lead pipes and the feeling of bending such a pipe would have been common knowledge. However, in today's context, with the use of polyvinyl chloride (PVC) pipes, students would not be able to relate to this experience at all. Similarly, the 'signet ring' which used to be a commonly worn item by kings and nobles to stamp their authentication on sealed correspondence and legal transactions during early civilisations and medieval periods has only a historical and heirloom value today. Students need to be shown the image of a signet ring to help them understand the resemblance. The game of rugger or rugby football is quite popular, albeit in a few countries and the 'rugger-jersey spine' seen as horizontal radio-dense lines in the upper and lower margins of the vertebral bodies in X-rays of patients with renal osteodystrophy, refers to the horizontally striped jersey typically worn by players in the game. However, this characteristic pattern is no longer seen in the attire of rugby players and while the game itself is only known to a few, the relevance of the pattern of the jersey would also be confusing to those who do.

A reference to an obsolete sociocultural element is the sodden, macerated postmortem appearance of palms and soles in bodies immersed for a long time in water, called the 'washer-woman's sign'. This is because the washerwoman, whose occupation was to wash people's clothes, had palms that were softened and wrinkled due to constant washing. This profession hardly exists today as washing, even on a commercial scale, is now automated in most regions. Another noteworthy mention is the 'pill-rolling tremor' in Parkinson disease. The term pill-rolling is meant to evoke imagery of the ancient art

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of dispensing pills in the era of apothecaries, where the medicinal paste was rolled into small spherical masses between the fingers and thumb (Yu, 2015). Some other occupation-related conditions that existed in the past such as the 'coal miner's lung' in pneumoconiosis, farmer's lung or bird fancier's lung for hypersensitivity pneumonitis, and athlete's foot for ringworm infection of the toes are still being used despite the decline in their prevalence due to improved occupational health strategies and hygiene. The term 'pugilistic attitude' refers to an artefactual change in body posture seen in cases of burning or advanced putrefaction and is meant to resemble the flexing of the upper limbs into a posture that resembles a boxer's (pugilist) stance. Scrutiny of the postmortem posture shows that the arms are partially flexed and partially abducted at the shoulder joint, flexed, and pronated at the elbow joint while the hands are partially clenched and flexed at the wrist. This posture certainly does not resemble the stance in modern-day boxing and is only like stances depicted in paintings and murals of boxers during Roman times (Vivonia, 2020).

Misnomers are a frequent occurrence in medicine (Manikat & Chopra, 2023). Two terms that we felt were relevant in this regard were 'hay fever' and 'rodent ulcer'. It is now quite well known that hay is not the cause for seasonal allergic rhinitis as once believed. The term 'rodent ulcer' is frequently used to indicate the chronic invasive ulcer of basal cell carcinoma. The term has its origins in the mid-1800s (Paul, 1885) when rodent bites were a common occurrence due to poorer housing and sanitary conditions. However, in today's context where rodent bites are a rarity, understanding its relevance is quite challenging.

The characteristic description of the single file pattern of nuclei in many tumors, typically seen in invasive lobular breast carcinoma, has been popular as the 'Indian file pattern' since the mid-1960s (Pai, 2025). This phrase which originates from the European settlers' descriptions of how the Red Indians move in a line behind one another when hunting or warring is irrelevant now, as the current lifestyles of these native American Indians are quite different and conflicts with the current principle of moving away from ethnically or racially charged references in medical terminology (Magguilli et al. 2024).

C. Rethinking Medical Terminology for a More Equitable Medical Education

Some scholars view the use of exclusively Anglo-European terms in medical education in non-English-speaking countries as a continuation of colonialism in Western allopathic medicine (Jayasinghe, 2021; Shankar, 2024; Supe, 2016). Considerable inequities have been identified in health professions education between the global north and the global south (Rashid & Grant, 2024) which include the slow update cycle of medical textbooks, the comparative dearth of medical textbooks from the global south, and the need for medical educational institutions to align with Western models for accreditation and employability.

While it is understandable that certain metaphors and eponyms simplify medical concepts and make the study of medicine more interesting and colourful, care should be taken to ensure that they do not become added burdens to the student. If medical eponyms and metaphors intend to enhance memory and understanding then, these unfamiliar terms would create a paradoxical effect to a significantly large population of medical students who come from Asian, African or South American countries. An interesting point to note was that many of the learning resources we screened did not explain the meaning of these terms. This problem is likely to be aggravated among future generations of medical students as their teachers may be unfamiliar with the terms themselves.

A proposed strategy would be to avoid eponyms and metaphors and use more descriptive terminology instead. Recommendations have been made to streamline the use of medical eponyms and reduce confusion, especially considering the globalisation of the medical fraternity (Jana et al., 2009), and possibly as a response, there has been a reduced usage of eponyms in scientific papers since the early 90s (Thomas, 2016). However, this is likely to make medicine even more monotonous to the student and possibly, complicate communication among medical professionals. Like the debate on the use of eponyms (Fargen & Hoh, 2014) there would be those who value the continued use of these metaphors and figurative labels despite their obscurity and colonialist links. However, in the context of providing equitable medical training to the vast numbers of students from non-English speaking backgrounds, the continued use of such unfamiliar and obscure terms needs re-evaluation.

D. Limitations and Recommendations

The terms generated through this study are limited to the teaching and learning resources available within our institution which restricts the generalisability of the significance of using these terms in medical education. Although we used the most recent editions of textbooks, some of them had not been editorially revised within recent times. We did not use any structured systematic protocol to explore the definitions of these terms. We do not have any data related to how frequently these terms were used or the actual context of how they were taught within the curriculum. Therefore, we are unable to

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indicate the actual impact of these terms on student learning nor any strategies to minimise them. Further studies should incorporate a wider variety of sources and attempt to quantify their use within teaching and assessments in medical curricula in different institutions. We also propose focus group discussions and interviews with students and educators to explore their understanding and perceptions of these terms. While the value of using these unfamiliar terms to teach medicine to non-English speaking medical students is debatable, their inclusion in assessments would be less justifiable. If such terms are to be used, teachers should ensure that their etymological relevance is also clearly explained in the teaching-learning material, and we believe that this article would be a useful resource in that regard.

IV. CONCLUSION

We identified several outdated, culturally exclusive metaphors, eponyms, and historical references which would have once served as vivid teaching-aids in medicine, but could now pose a challenge to medical students, particularly from non-English-speaking backgrounds. Although the variability of teaching practices across institutions limits their generalisability, these findings reveal a tension between historical shorthand and modern inclusivity, urging a rethink of medical language. Future research across multiple institutions and different cultural contexts would provide a clearer understanding of the prevalence, educational impact, and cultural resonance of metaphorical medical terms in contemporary medical education. This would, however, need strong collaborative approaches as access to institutional material is often restricted.

As an initial exploration, this study lays the groundwork for global dialogue and provides some practical implications for medical educators to either contextualise these terms explicitly or replace them with more universally acceptable terminology. Educators could consider piloting a more descriptive, standardised medical lexicon that transcends cultural and linguistic barriers, especially in the pre-clinical disciplines and evaluate their outcomes. Although such endeavours would require consensus and efforts from numerous experts, it would make the learning experience more equitable and effective for students worldwide.

Notes on Contributors

Author SAG designed the study and the methodological framework and was involved in data collection, data analysis and final revision and formatting of the manuscript. Author RSH was involved in data collection, data analysis, drafting and revising the manuscript and is the corresponding author. Author YHN was involved in data collection, data analysis and drafting of the manuscript. Author TSS was involved in data collection and drafting of the manuscript. All authors have read and approved the final manuscript.

Ethical Approval

University approval for the use of teaching learning materials was granted, and as it was a review of terms, no further ethical issues were considered.

Data Availability

The extracted data can be made available if needed.

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Declaration of Interest

All authors confirm that they have no conflict of interest in conducting this study.

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