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Unveiling challenges of developing and implementing medical curricula in Pakistan: Insights from a comprehensive literature review

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ABSTRACT

Background & Objectives: Pakistan grapples with persistent challenges in medical education standards and curriculum development (CD), marked by a Western-centric focus and lack of coherence. A comprehensive literature review uncovers nuanced obstacles, emphasizing the need to address international degree recognition and healthcare delivery. The World Federation for Medical Education (WFME) 's Basic Medical Education (BME) standards offer a vital framework for enhancing educational quality. The objectives of the literature search are to identify inhibitors in CD, explore factors hindering curriculum implementation (CI) and examine obstacles in translating curricula into effective learning (CL). **Methods:** The literature search employed a comprehensive three-phase strategy to identify and analyze inhibitors and barriers in the development and implementation of medical curricula. The first phase involved keyword searches, the second phase targeted specific barriers related to BME standards, and the third phase included forward and backward searching through references and citations discussing inhibitors in undergraduate medical education. The review organizes inhibitors methodologically, covering areas of WFME standards. **Results:** Inhibitors in CD and Implementation encompass political interference, challenges in research methods, evidence-based medicine, ethics, safety, and health promotion. Barriers involve the absence of role models, a research culture, and challenges in program structure design. Implementation faces issues like clinical teacher involvement, time constraints, disciplinary barriers, and curriculum management deficiencies. Additionally, obstacles in adopting lifelong learning methods include faculty training gaps. Despite evidence suggesting challenges in meeting BME standards by the WFME, addressing these issues requires collaborative efforts, faculty development, and strategic planning to enhance global medical education quality. **Conclusion:** The article underscores challenges in developing and implementing medical curricula, particularly in developing countries like Pakistan. Evidence indicates significant obstacles for medical educators, with a lack of resources, infrastructure, technology, and financial support hindering the attainment of BME standards by the WFME. Collaborative efforts, faculty development, and strategic planning are crucial to overcome these inhibitors and enhance global medical education quality.

Key words: curriculum, inhibitors, factors, effecting, impeding, development, implementation, learned.

INTRODUCTION

According to Kern, to fulfil the contemporary demands of society and patients, medical educators not only need to develop an excellent, needful, and reliable curriculum but also implement it in its full spirit and ensure that the medical student has learned what the educator meant to teach them.[1,2] But the evidence suggests that the medical educators are lagging in achieving these objectives especially in developing countries like Pakistan.[3] Liaison Committee on Medical Education (LCME, USA), Committee on Accreditation of

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Canadian Medical Schools (CACMS, Canada), Korean Institute of Medical Education and Evaluation (KIMEE, Korea), Pakistan Medical and Dental Council (PMDC) and Association of Medical Schools in Africa (AMSA, Africa) are few examples of working bodies around the world which are trying to set and implement standards for medical education in their respective countries (*Accreditation of medical education institutions Report of a technical meeting*, 2004).[4,5] The problem arises when graduates of one country move to another, and the accreditation body does not recognize or accept these standards because the quality of standards vary to such an extent that reliability is compromised. In Pakistan there are multiple problems relating to standards of medical education and curriculum development (CD) and curriculum implementation (CI). The medical curriculum of Pakistan was taken from the west since beginning with no effort put forth to make one which should reflect our social and cultural context.[6] PMDC accreditation process primarily focuses on assessing infrastructure of medical colleges, rather than evaluating educational processes and outcomes.[7] This resulted in the non-recognition of our degree internationally in the past and progressive deterioration of the health care delivery system. Progress is underway to update the curriculum with a focus on student-centered approaches, seamless integration, and alignment with community requirements.[8]

Since the late 1990s, the accrediting bodies around the world have sensed somewhat similar problems and gathered around to discuss and find a solution for this issue.[9] The expectation was that each medical graduate from any medical school/college around the world should be provided with an up to the mark educational experience which is evidence-based. This "up to the mark" in this case was prepared and shared with the world in the form of Basic Medical Education (BME) standards by World Federation for Medical Education (WFME) (The WFME, 2015). There are 9 major areas and 35 subareas of BME standards which include both the basic and quality standards. However, as the saying goes "it is easier said than done". The worldwide dissemination and the expectation to apply these standards has created a lot of hue and cry in the world of medical education. Abiding by the standards set by WFME is a difficult destination to reach as the road is full of barriers, inhibitors, and impeding factors. These inhibitors work at various stages: from need assessment in CD to the adoption of newer educational strategies, from implementing the developed curriculum to assurance that the learner has learned the intended curriculum. This is a humongous challenge for the medical colleges of developing countries to bring a rapid development in medical curriculum to make it "up to the mark" without basic human, infrastructure, technological and financial resources. This literature review aims to map some of the important inhibitors/impeding factors that affect curriculum from its birth to growth and further flourishing. The objective of this literature review is to find out the factors: (1) inhibiting effective CD; (2) impeding implementation of the developed curriculum; (3) affecting effective translation of the developed curriculum into the learned curriculum.

SOURCES AND RETRIEVAL METHODS

An extensive literature search was performed in three phases. In the first phase 3 databases were searched using the keyword "curriculum" combining with different terms like medical, Bachelors of medicine & Bachelors of surgery (MBBS), development, implementation, learned, barrier, inhibitor, factors affecting, and lessons learned to make various blends. The databases searched were Education Resource Information Centre, PubMed, and Google scholar. All the publications which discussed the problems faced during development or implementation of curriculum, regardless of the timeline, were selected by surfing the titles. The articles which were selected by title-surfing were further scrutinized by reading the abstract and/or the full article. The article was selected if it discussed any one of our objectives. The articles which vaguely met the criteria were selected after full review.

To specifically find out the barriers related to all 9 areas of BME standards by WFME repeated searches were done in the second phase by using the specific statements such as "difficulties in stating mission/vision of a medical college" and "effect on curriculum with autonomy given to medical institution". Titles of the retrieved articles were inspected to find the best match with the objectives and 1 or 2 articles were selected after going through the abstracts or the results and discussion if required. In the third phase, forward and backward searching was done by looking into the references and citations of the selected articles.

Another strategy employed to search the literature on inhibitors of curriculum was to use the inhibitors as keywords which were in researcher's knowledge but not found during first two phases of search.

The inclusion criteria consisted of the following points: (1) articles discussing inhibitors faced by the educators during the development or implementation of curriculum; (2) inhibitors affecting curriculum viability mentioned explicitly or implicitly; (3) preferably the undergraduate medical curriculum; (4) medical curricular reforms discussed along with the lessons learned; (5) original articles, review articles, dissertations, newspaper article if by medical educator, reports and lectures or

conference presentations were all included. The exclusion criteria included articles discussing CD and implementation at school level or post graduate level or the articles in language other than English.

RESULTS

Total number of publications or works cited were 63. The distribution of articles based on publication year (Figure 1), publication type (Figure 2) and the country of origin (Figure 3) are shown in respective figures.

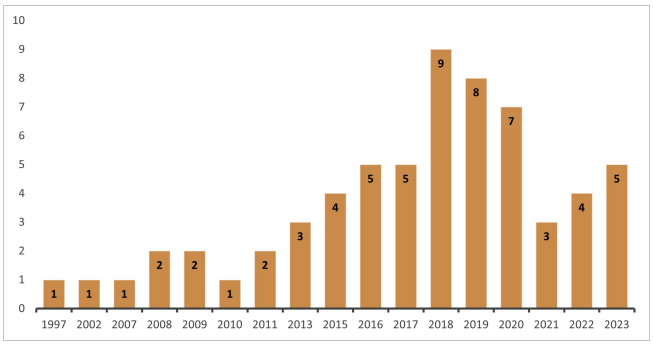

Figure 1. *Year-wise publications*

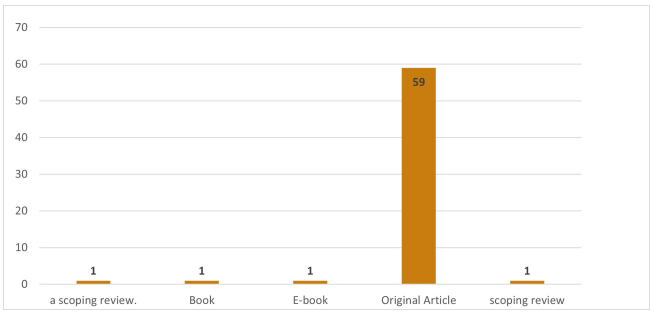

Figure 2. *Types of Publications*

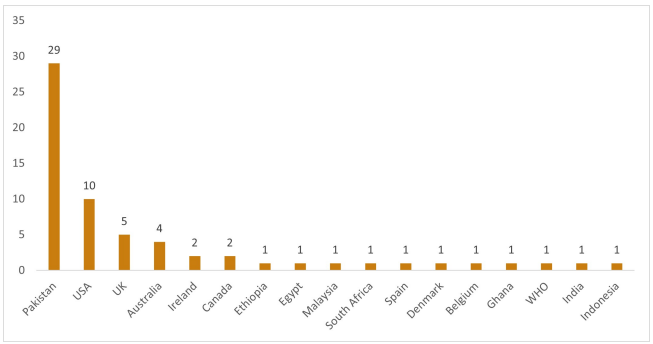

Figure 3. *Country-wise Publications*

The results are organized according to the steps of CD given by Harden, synthesized, and arranged in two dimensions. The first dimension is the identified inhibitor in achieving the basic Standard of WFME and the second dimension is the type of curriculum it affects *i.e.*, the CD or CI or CL (supplementary material).

DISCUSSION

Need identification-Mission (WFME 1.1)

To meet the basic standard 1 in WFME documents *i.e.,* MISSION and OUTCOMES, general and specific need assessment is the requirement. Comprehensive and discrete knowledge about the societal health care needs, health system needs, and the learner's needs are the minimum that the medical curricular developer should have. To find out the status of mission and vision statements of various medical colleges of Pakistan their websites were searched. Very few were available on the internet. Those which were shared varied in quality and type of data provided. None fulfilled the basic standards B 1.1.4 – 1.1.8 as given in WFME standard document and none was enriched with clear focus on student learning and defined pathways for their success.[10] By not placing the mission/vision statement on website open for the public and all the stakeholders to read the message sent is either the medical schools are not following any mission policy (which is very unlikely), or they are not aware of the fact that mission statements and educational outcomes are public property which need to be showcased.[11] In addition, none of the mission vision statements included any aim about fostering research culture or dealing with global health aspects.[11,12] Another point may be the lack of knowledge about conducting surveys to collect the required data and convert it into meaningful mission and outcome statements.[13] There might as well be insufficient acquaintance with internet technology that enables them to showcase their true spirit and ambitious achievements to the world *via* websites.[14] Another inhibitor might be the fear of political misinterpretation or misuse of the information provided in the mission and vision statement and educational outcomes of medical colleges. One more inhibitor identified to fulfil the above standard was lack of appropriately working Health Management Information System.[15–17] All other steps of CD depend upon this first step of establishing the justifications for the content chosen, strategies adopted for teaching and learning and assessment formats.[18]

Institutional autonomy and academic freedom (WFME 1.2)

All public and private medical colleges in Pakistan need to abide by the policies and laws made by PMDC. The minimum requirements of faculty and the equipment and other resources are followed as a firm rule by all colleges even if the needs are not fulfilled by those minimum standards. As the responsibilities posed on the

faculty are far more than one can carry out to achieve all the curricular outcomes. This financial resource containment policy puts a lot of burden on human resources which in turn have poor effects on CD, CI and CL.[19]

Some inhibitors found to affect the CD, CI and CL in this area include the political meddling in (1) appointment of staff, (2) student disciplinary matters, (3) student selection and admissions, (4) assessments, (5) evaluations.[20,21]

PMDC gives medical colleges the autonomy to make their own policies regarding faculty and staff induction and acquiring of other resources to deliver the curriculum in its full spirit, but this autonomy has not been fully exploited in a fruitful manner rather the political and financial barriers pose hindrance in addressing the student's and societal need effectively.[22–24] Institutional autonomy can both be good or bad depending upon its use. It is required to make decisions in one's own interest and contexts but should not go beyond the government boundaries.[25,26] Lack of institutional autonomy will affect the CI and the lack of control of institutional autonomy will affect CD and CL.[22]

Participation in formulation of mission and outcomes (WFME standard 1.4)

While in the curricular renewal process the resistance is mostly posed by the stakeholders involved, which include the students, faculty, and staff because they don't feel part of the program or a sense of ownership. This resistance is a big inhibitor in CD, CI and CL.[27] To overcome this resistance all the stakeholders need to be a part of the whole process of change which should give them a sense of ownership of the institution and the curriculum.

Educational outcomes, Goals and Objectives (WFME 1.3)

The inhibitors of deciding and writing educational outcomes or objectives (EO) inhibit all three types of curricula *i.e,* CD, CI and CL. These include (1) poorly phrased, too long or too short EO; (2) EO not matching with the teaching strategy or time allocated or the assessment strategy; (3) EO not made according to the level of the student.[28] Intensive faculty development and training is required in writing Eos and learning objectives (LOs) at all levels.

In the curriculum made by PMDC the B 1.3.1. Standard stated and its importance is duly emphasized in teaching and assessment strategies but the rest of WFME basic standards from B 1.3.2 to B 1.3.7 are neither drafted nor taken as a must to achieve before declaring the graduate successful.

Content and methods of medical curriculum (WFME 2.1)

To define a curriculum which is student centered and based on principles of equality (WFME standard B 2.1.1 to 2.1.3) is a big task which has not been satisfactorily carried out by the PMDC. The current curricular document of PMDC contains mostly the syllabus, the selection process of which has not been declared. The overall curriculum which should meet the WFME basic standard 2.1.1 to 2.1.3 is completely missing. The inhibitors identified in this area are (1) poor leadership effecting CD, CI and CL; [29] (2) the methods of curriculum supervision which restrict curricular reform affects CD and CI; [30] (3) the inflexibility in attitudes which is required to bring reforms like changing teaching methodologies and tools which affects CI and CL; (4) passive institutions with no input in making of curriculum or implementing the one provided in full spirit [31] which affects CD, CI and CL; (5) inadequate planning of the intended implementation affecting CI and CL; (6) insufficient allocation of funds required for implementation Affecting CI and CL; (7) under-utilization of technology with information technology coordinators which affects CI and CL;[32] (8) inadequate supervision of the program affecting CI and CL and (9) ineffective communication among institutes and faculty about the purpose of the innovation affecting CD, CI and CL;[33] (10) factors affecting curriculum fidelity affecting all three types of curriculum; (11) lack of use of validated and reliable instruments for student assessments, assessment tools too difficult or too easy for the level of students and no blueprinting of the assessments with teaching hours and strategies affecting all three types of curriculum;[34–36] (12) perceived limited curricular time to convert to student-centered approach and (13) lack of faculty training on interactive teaching (14) lack of conviction and satisfaction among elderly faculty members regarding newer approaches who think student centered approach doesn't fit the needs of the students [37] and (15) objectives are too numerous to be achieved affecting CD, CI and CL;[38] (16) lecture modification on the basis of principles of learning and cognitive load theory is perceived as a very difficult task affecting CD, CI and CL;[39] (17) poor evaluation process of teaching and learning process and (18) no evaluation of outcome assessment or student achievement which affects CD or renewal;[40,41] (19) students admitted in medical colleges at the age of 18–19 years with no background of self-directed study so they resist to new ways of learning and usually want to remain a passive learner like in past which affects CL;[42] (20) lack of infrastructure, computers and internet facilities to adopt student-centered learning which affects CI and CL; (21) very high student to teacher ratio which affects

CI and CL.[43,44]

Scientific method including research methods and evidence-based medicine (B 2.2.2 and 2.2.3)

Barriers in achieving these standards are (1) absence of a role model for the students; (2) no or poorly managed research projects at undergraduate level; (3) no electives offered in research methodology by the college or university; (4) no opportunity to write a research paper during undergraduate degree; (5) no desire among students to pursue a degree as a researcher; (6) absence of research culture in medical colleges.[45,46] Similarly, to adopt evidence-based medicine (EBM) curriculum there is need for guidelines to develop one and then implement. Faculty is mostly not aware of what EBM is and how or where to incorporate it in medical curriculum. Some academicians link it to research methodology and ask the department of community medicine or Medical Education to teach it.[47,48]

Medical ethics (WFME 2.4.3)

The barriers in achieving this standard are (1) debate among academicians upon the content and domain of teaching; what topics should constitute the ethics curriculum; should it be taught as a separate subject or should it remain a part of hidden curriculum; should it be included only in cognitive domain or in attitude domain or in both which leads to indecisiveness on teaching methodologies; (2) lack of consensus upon who should teach the subject; (3) what should be the key competencies of medical ethics; (4) currently it is taught in parts in Behavioural sciences, Community Medicine, Forensic Medicine and during bedside teaching which makes assessment difficult resulting in no assessment of this basic standard anywhere anytime during 5-year-curriculum; (5) no-availability of learning resources on medical ethics, research ethics and/or practice ethics; (6) poor role modelling by the medical teachers in our context.[49] All the inhibitors identified above clearly show that all three types of curricula will be affected by these barriers.

Patient safety (WFME 2.5.5)

Patient safety is not included in the medical curriculum given by PMDC explicitly so CD, CI and CL are all affected here due to the lack of awareness (the inhibitor) about the need to develop curriculum and teach it in medical colleges.[50]

Health promotion (WFME 2.5.3)

Currently according to PMDC curriculum health promotion (HP) is only taught as a single topic in the subject of community medicine during 4th year. To meet the above standard of WFME and make students realize the importance of HP and Preventive Medicine (PM) is not well thought of, planned, and taught *i.e*, the barrier because of which medical graduates fail to view the patients in holistic manner. Other barriers identified in this regard were (1) non-integration of HP and PM in basic and clinical problem-based learning (PBL) or case-based learning (CBL); (2) no elective or mandatory rotation in the field of HP or PM; (3) participation of students in Community oriented HP and education services is not mandatory by PMDC regulations; (4) competency for being an effective Health promoter is not well defined and is not taken as a core competency for MBBS graduates.[51–53]

Program structure, composition, and duration (WFME 2.6)

This standard includes the content extent and sequencing of courses as basic standard and the horizontal and vertical integration as quality standard. The barriers identified in achieving this standard are (1) lack of full involvement of clinical teachers and not ready to work beyond departmental barriers; (2) lack of time which is required for planning, organization and execution; (3) discipline- based departmental structures and integration seen as a threat to individual subject growth and autonomy; (4) poor curricular management capacity of the organization; (5) power knowledge dichotomy; (6) understanding that anybody with a post-graduate degree can teach. Medical teachers are hired without any training in education and the same rise above to become the curriculum managers and deans of medical college; (7) no or little expertise in CD, alignment, and mapping; (8) no interest in learning the computer or technology which help in making and using the soft wares and tools. All these inhibitors lead to the catastrophe of poor CD, CI and CL.[54]

Educational strategies (WFME B 2.1.2)

The instructional methods suggested by WFME include PBL, CBL, peer-assisted learning (PAL), field exercises in community and web-based instructions in addition to lectures and small group teaching. The inhibitors of adopting this instructional methodology mainly affect the CI and eventually CL. Some of the inhibitors are (1) no training of faculty on interactive teaching or as a PBL/CBL facilitator; (2) teacher's characteristics like: their response to reforms and innovations, their pedagogical skills, their enthusiasm for teaching and self-efficacy act as inhibitors of CI and CL; (3) sincerity in program implementation by the leadership and political figures inhibit CD, CI, CL; (4) institutional factors like: openness to innovations, skills of problem solving, supportive directors and administrative staff, institutional environment inhibit CI and CL.[55,56]

Assessment of students (WFME B 3.1)

The basic standards for assessment of students as

required by WFME seems to be inhibited by a lot of factors which include (1) the effects of pure outcome-based curricula in which assessment plays a role of deterrent and lowers the quality of educational process leading the students to learn only superficially. In such case assessment method itself become a barrier to CL; (2) lack of motivation and time constraints for the faculty to prepare assessments according to the utility index and check the reliability and validity of assessment methods employed; (3) perceived difficulty among the faculty members to write good assessment items; (4) lack of quality assurance procedures and feedback to medical teachers about the quality of items and their flaws; (5) even when the trainings are provided regarding item construction there are inconsistent interpretations of commonly used terms by the faculty;[34] (6) absence of central assessment committees in most medical colleges and lack of blue printing practice to make assessments valid and reliable *i.e.* associated with learning.[36] Assessment methods and procedures affect especially the CL.

Educational environment (WFME 4.1 and 4.3)

The current procedure of student selection for medical college entry is based on previous academic record and entry test performance, *i.e*, only the cognitive qualities are considered. No mechanism of evaluating non-cognitive qualities like personality traits, empathy, professionalism, and commitment to the field are employed in our part of the world. These factors play a major role in the settlement of the students in medical college and their learning performance. As it is seen and documented in the literature that the medical students face more stress during their early college years than most other professional students. Even though the students coming to medical colleges are the highest achievers in cognitive domains of learning before entering into the medical colleges. This non-linking of the desired attributes with selection process might act as an inhibitor of CL.[57]

In addition, after the selection of the best students from the applicants no support, orientation or academic guidance is provided to the students in medical colleges. Although the role of mentoring and student support system is well established in the literature, but the real support system does not exist in most medical colleges of Pakistan. Students not being told about what is expected of them and how are they going to achieve it acts as a great inhibitor in CL.[58]

Student participation and representation (WFME 4.4)

Students' participation and representation in the curriculum management and evaluation committees has never been seen as a necessary or important step in our context. The barriers identified to achieving this standard are the attitudes of parents and teachers in this part of the world towards their students who are always treated as children. They are never seen as adults and individuals with their own thoughts and ideas which might be full of intellect and usefulness. Even if under the pressure to fulfil the standards by the accrediting bodies these students are made part of different committees their voice is never heard and given due importance.[1]

Academic staff recruitment and selection policy (WFME 5.1)

Academic staff and faculty with no or little interest, training or experience in academic activities face difficulties in grasping the concepts of curriculum mapping, alignment, methods in achieving the graduate attributes required at the end of courses like good communicator, professional, healthcare team manager and leader, problem solver *etc*, act as a barrier in CI and CL. There should be some criteria for recruitment of academic staff beyond the degree and the experience gained by passive time spent as teachers with no inclination towards student's or institutes progress and development.[1]

Sharing LOs and curricular mapping

Communication of the curriculum with all the stakeholders is not a usual practice in most of the medical colleges in Pakistan. This communication gap poorly affects CI and CL.[59]

Curricular mapping is a task that requires a lot of effort, time and computer expertise which is lacking in the staff of most medical colleges.[60]

Managing the curriculum (WFME 8.1 and 8.2)

Medical teachers complain about the too little support or encouragement they get from the administration and the leadership regarding their teaching roles. So, when it comes to personal satisfaction and recognition from others, they feel happy and secured in their clinical roles and find it difficult to take time out for academic activities where the benefits of hard work are not seen as early as in clinical practice. Medical teachers also think that they are not included in the system of education and their concerns regarding students' attitudes in the class, monitoring of their behaviours other than academic performance, and their judgment about the students are not taken into account at senior level which result in a serious harm when they are commanded to change their previous teaching methods and adopt new ways to make a graduate studded with all the qualities listed in the mission and vision of medical school.[61] So the inhibitors for governance and academic leadership in implementing the intended curriculum might be (1) not

taking the whole team on board and not assuring that they all understand what is being done and why, (2) not training the faculty or staff in new approaches to be implemented (3) not providing sufficient time to faculty and staff members to complete necessary preparations and engage in new activities (4) not monitoring the performance of staff and students (5) not providing timely and constructive feedbacks (6) failure to provide an ongoing support and a flexible environment [33] (7) leadership not able to maintain the conducive and responsible educational environment for both staff and faculty (8) leadership not able to perform supervisory functions required to maintain the discipline and continues hard work.[62,63]

CONCLUSION

The literature search regarding the impeding factors of MBBS curriculum reveals the weaknesses that are deeply imbedded in the personalities of all stakeholders involved. Most of the administrative members, senior faculty and some of the students do not want to work hard to achieve quality standards. There is great incongruence between the existing belief structure of the employees and underlying philosophies of the curriculum. In addition, the monitoring and regulatory situation is very weak which leads to poor output at grass root level. Because as the assessment drives learning, effective regulations and continuous monitoring drives the employees to work harder and honestly to successfully develop and implement a curriculum which fulfills the societal needs and reliably assess the graduates in all domains *i.e*, knowledge, skills, and attitudes.

DECLARATION

Author contributions

Ansar A involved in the conceptualization, drafting, and editing of the article and contributed to revision and review of the manuscript and provided approval of the final submitted version.

Ethics approval

Not applicable.

Conflict of interest

The authors declare no competing interest.

Data availability statement

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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