Supplementary Table: Summary of inhibitors identified at each step of curriculum development, relevant WFME standard and the type of curriculum affected by the inhibitors

Steps of curriculum development	WFME Standards	Inhibitors identified	Type of curriculum affected		
			Developed	Implemented	Learned
Problem identification and general needs assessment	Mission (WFME 1.1.)	not aware of the fact that mission statements and educational outcomes are public property	Yes	Yes	Yes
		No mentioning of research culture or dealing with global health aspects	Yes	Yes	Yes
		lack of knowledge about conducting surveys to collect the required data and the convert it into meaningful mission and outcome statements	Yes	Yes	Yes
		insufficient acquaintance with internet technology	Yes	Yes	Yes
		fear of political misinterpretation	Yes	Yes	Yes
		misuse of the information provided in the mission and vision statement	Yes	Yes	Yes
		lack of appropriately working HMIS	Yes	Yes	Yes
	Institutional autonomy and academic freedom (WFME 1.2.)	The minimum requirements of faculty and the equipment and other resources are followed as a firm rule putting extra burden on the teaching faculty	Yes	Yes	-
		political meddling in (1) appointment of staff, (2) student disciplinary matters, (3) student selection and admissions, (4) assessments, (5) evaluations	Yes	Yes	Yes
		autonomy has not been fully exploited in a fruitful manner	Yes	Yes	
		lack of control of institutional autonomy	Yes	Yes	
	Participation in formulation of mission and outcomes (WFME standard 1.4.)	not including stakeholders involved *i.e.* the students, faculty and staff in formulation of mission of the institution	Yes	Yes	
Educational outcomes (EO), Goals & Objectives	Educational outcomes (WFME1.3.)	poorly phrased, too long or too short EO	Yes	Yes	Yes
		EO not matching with the teaching strategy or time allocated or the assessment strategy	Yes	Yes	Yes

Content & Educational strategies and methods of medical curriculum	Educational programme (WFME 2.1.)	Issue			
		EO not made according to the level of the student	Yes	Yes	Yes
		B 1.3.2 to B 1.3.7 are neither drafted nor taken as a must to achieve before declaring the graduate successful	Yes	Yes	Yes
		current curricular document of PMDC contains mostly the syllabus	Yes	Yes	Yes
		selection process of Content or syllabus has not been declared	Yes		
		The overall curriculum which should meet the WFME basic standard 2.1.1 to 2.1.3 is completely missing	Yes		
		poor leadership	Yes	Yes	Yes
		the methods of curriculum supervision which restrict curricular reform	Yes	Yes	Yes
		the inflexibility in attitudes which is required to bring reforms like changing teaching methodologies and tools which affects	Yes	Yes	
		passive institutions with no input in making of curriculum or implementing the one provided in full spirit	Yes	Yes	Yes
		inadequate planning of the intended implementation		Yes	Yes
		insufficient allocation of funds required for implementation		Yes	Yes
		under-utilization of technology		Yes	Yes
		inadequate supervision of the program		Yes	Yes
		ineffective communication among institutes and faculty about the purpose of the innovation		Yes	Yes
		factors affecting curriculum fidelity		Yes	Yes
		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 & strategies		Yes	Yes
		perceived limited curricular time to convert to student-centered approach and		Yes	Yes

Category	Subcategory	Item			
		lack of faculty training on interactive teaching		Yes	Yes
		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		Yes	Yes
		objectives are too numerous to be achieved		Yes	Yes
		lecture modification on the basis of principles of learning and cognitive load theory is perceived as a very difficult task		Yes	Yes
		poor evaluation process of teaching and learning process	Yes	Yes	Yes
		no evaluation of outcome assessment or student achievement			Yes
		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			Yes
		lack of infrastructure, computers and internet facilities to adopt student-centered learning		Yes	Yes
		very high student to teacher ratio		Yes	Yes
Content & Educational strategies and methods of medical curriculum	Scientific method including research methods and evidence-based medicine (B 2.2.2 & 2.2.3)	absence of a role model for the students			Yes
		no or poorly managed research projects at undergraduate level			Yes
		no electives offered in research methodology by the college or university			Yes
		no opportunity to write a research paper during undergraduate degree			Yes
		no desire among students to pursue a degree as a researcher			Yes
		absence of research culture in medical colleges			Yes
		need of guidelines to develop curriculum on EBM and then implement	Yes	Yes	Yes
		Faculty is mostly not aware of what EBM is and how or where to incorporate it in medical curriculum	Yes	Yes	Yes

		Some academicians link EBM to research methodology and ask the department of community medicine or Medical Education to teach it	Yes	Yes	Yes
Content and methods of medical curriculum	Medical ethics (WFME 2.4.3)	debate among academicians upon the content and domain of teaching	Yes	Yes	Yes
		should it be taught as a separate subject or should it remain a part of hidden curriculum	Yes	Yes	Yes
		should it be included only in cognitive domain or in attitude domain or in both which leads to indecisiveness on teaching methodologies	Yes	Yes	Yes
		lack of consensus upon who should teach the subject	Yes	Yes	Yes
		what should be the key competencies of medical ethics	Yes	Yes	Yes
		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	Yes	Yes	Yes
		no-availability of learning resources on medical ethics, research ethics and/or practice ethics	Yes	Yes	Yes
		poor role modelling by the medical teachers in our context		Yes	Yes
	Patient safety (WFME 2.5.5)	Nothing on patient safety is included in the medical curriculum given by PMDC explicitly	Yes	Yes	Yes
Content and methods of medical curriculum	Health promotion (WFME 2.5.3)	non-integration of HP &PM in basic & clinical PBLs/CBLs	Yes		Yes
		no elective or mandatory rotation in the field of HP or PM	Yes		Yes
		no participation of students in Community oriented health promotion & education services is not mandatory by PMDC regulations	Yes		Yes
		competency for being an effective Health promoter is not well defined	Yes		Yes

Area	Standard	Challenge/Barrier			
		and is not taken as a core competency			
	Programme structure, composition and duration (WFME 2.6)	lack of full involvement of clinical teachers and not ready to work beyond departmental barriers		Yes	Yes
		lack of time which is required for planning, organization & execution	Yes	Yes	Yes
		discipline- based departmental structures and integration seen as a threat to individual subject growth and autonomy	Yes	Yes	Yes
		poor curricular management capacity of the organization		Yes	Yes
		power knowledge dichotomy		Yes	Yes
		phenomenon of PDTM *i.e.* can anybody with a post-graduate degree can teach?	Yes	Yes	Yes
		no or little expertise in curriculum development, alignment and mapping	Yes	Yes	Yes
		no interest in learning the computer or technology which help in making and using the soft wares and tools	Yes	Yes	Yes
Educational strategies	Use of instructional methods that make student lifelong learners (WFME B 2.1.2)	no training of faculty on interactive teaching or as a PBL/CBL facilitator		Yes	Yes
		teacher's characteristics like: their response to reforms and innovations, their pedagogical skills, their enthusiasm for teaching and self-efficacy		Yes	Yes
		sincerity in program implementation by the leadership and political figures		Yes	Yes
		institutional factors like: openness to innovations, skills of problem solving, supportive directors and administrative staff, institutional environment		Yes	Yes
Assessment of students:	Assessment methods (WFME B 3.1.)	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.			Yes

		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	Yes	Yes	Yes
		perceived difficulty among the faculty members to write good assessment items	Yes	Yes	Yes
		lack of quality assurance procedures and feedback to medical teachers about the quality of items and their flaws	Yes	Yes	Yes
		even when the trainings are provided regarding item construction there are inconsistent interpretations of commonly used terms by the faculty		Yes	Yes
		absence of central assessment committees in most medical colleges		Yes	Yes
		lack of blue printing practice to make assessments valid and reliable *i.e.* associated with learning		Yes	Yes
Educational environment	Student selection and social support system (WFME 4.1 & 4.3)	No mechanism of evaluating the non-cognitive qualities like personality traits, empathy, professionalism and commitment to the field			Yes
		non-linking of the desired attributes with selection process			Yes
		no support, orientation or academic guidance is provided to the students in medical colleges			Yes
		Students not being told about what is expected of them and how are they going to achieve it			Yes
	Student participation & representation (WFME 4.4)	has never been seen as a necessary or important step in our context		Yes	Yes
		attitudes of parents and teachers in this part of the world towards their students who are always treated as children			Yes
		if these students are made part of different committees their voice is never heard and given the due importance		Yes	Yes

	Academic staff recruitment & selection policy (WFME 5.1)	Academic staff & faculty with no or little interest, training or experience in academic activities	Yes	Yes
		difficulties in grasping the concepts of curriculum mapping, alignment, methods in achieving the graduate attributes required at the end of courses	Yes	Yes
		recruitment of academic staff with degree and passive time spent as teachers having no inclination towards student's or institutes progress and development	Yes	Yes
Communicating the curriculum	Sharing LOs & Curricular mapping:	not a usual practice in most of the medical colleges in Pakistan	Yes	Yes
		time and computer expertise which is lacking in the staff	Yes	Yes
		Lack of enthusiasm to learn the new technicology	Yes	
Managing the curriculum	Governance and Academic leadership (WFME 8.1 & 8.2)	too little support or encouragement the get from the administration and the leadership regarding their teaching roles	Yes	Yes
		Lack of personal satisfaction and recognition	Yes	Yes
		they feel happy and secured in their clinical roles	Yes	Yes
		difficult to take time out for academic activities where the benefits of hard work are not seen as early as in clinical practice	Yes	Yes
		Medical teachers also think that they are not included in the system of education and their concerns are not taken into account	Yes	Yes
		not taking the whole team on board and not assuring that they all understand what is being done	Yes	Yes
		not training the faculty or staff in new approaches to be implemented	Yes	Yes
		not providing sufficient time to faculty and staff members to complete necessary preparations and engage in new activities	Yes	Yes
		not monitoring the performance of staff and students	Yes	Yes
		not providing supportive, timely and constructive feedbacks	Yes	Yes

	failure to provide an ongoing support and a flexible environment	Yes	Yes
	leadership not able to maintain the conducive and responsible educational environment for both staff and faculty	Yes	Yes
	leadership not able to perform supervisory functions required to maintain the discipline and continues hard work	Yes	Yes

WFME: World Federation for Medical Education; EBM: evidence-based medicine; PMDC: Pakistan Medical and Dental Council; PMDC: Pakistan Medical; HP: health promotion