



Original Article

Developing a Longitudinally Integrated Forensic Medicine Curriculum Through Faculty Focus Groups: A Qualitative Curriculum Development Study

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ABSTRACT

Background: Forensic and Legal medicine applies the clinical practice to matters of law, ethics, the protection of the patient, and administration of justice. While these skills are applicable to all fields, they may be taught in a specific undergraduate course, so there is not as much repetition in their use.

Action Objectives: To discuss with the members of the focus group the challenges and opportunities for longitudinal integration within the faculty of Forensic Medicine, and to develop a five-year undergraduate curriculum based on the focus group findings.

Methods: The study was conducted in Lahore, Pakistan from September to November, 2025, and it is recommended as a qualitative study in curriculum development. The focus group discussions took place online via Zoom with five participants in each group (n=20). One professor, one or two associate professors and two or three assistant professors of Forensic Medicine per group. The participants were mostly from private medical colleges and were selected purposively via WhatsApp. Each session was 50-60 minutes in length and was recorded on Zoom and transcribed exactly as it occurred. Member checking was completed before inductive thematic coding. Themes were then translated into curriculum design requirements and mapped across a five-year modular MBBS program.

Results: The prevailing view favored longitudinal integration, although one participant argued that Forensic Medicine should remain discipline based. Four themes informed curriculum development: Forensic Medicine had remained isolated while other disciplines were being integrated; conventional content required review in favor of competencies relevant to contemporary medicolegal practice; pathology offered a practical starting point for horizontal integration; and integration needed safeguards to preserve disciplinary identity, faculty ownership, and assessment. The resulting model retained a named Forensic Medicine core while sequencing medicolegal learning from early professional awareness to senior practice-readiness activities.

Conclusion: Faculty focus groups provided a locally grounded rationale for longitudinal integration and shaped a five-year curriculum model. The findings establish professional support and design priorities, not educational effectiveness. Prospective evaluation is required to determine effects on learning, retention, competence, preparedness, and workplace performance.

INTRODUCTION

Forensic/legal medicine exists on the interface between clinical practice, professional obligation and justice. It is not limited to post-mortem investigation, but also covers clinical forensic examination, documentation of injury, evidence preservation, death certification, medical jurisprudence, professional liability and expert opinion. These duties are not restricted to forensic/ medicolegal experts, but can be encountered by doctors in other specialties such as Emergency Medicine, Surgery, Obstetrics and Gynecology, Pediatrics, Psychiatry, Primary Care etc. in their day-to-day work (1).

Recent literature supports formal Forensic Medicine education for all medical graduates. In a multicenter Italian study involving 1,022 students, course attendance was associated with greater perceived usefulness of Forensic Medicine, and the authors concluded that the discipline provides essential tools irrespective of future specialty choice (2). In India, interns, medical officers, and faculty strongly supported hands-on clinical Forensic Medicine training and recommended that clinical applications continue alongside clinical subjects and internship (3).

A compulsory course, however, does not automatically produce practice-ready graduates. A 2025 analysis of Forensic Medicine education in Nepal described marked variation in curricular content and practical exposure and linked current provision with poor medicolegal reporting among newly qualified doctors (4). Postgraduate trainees have reported similar gaps: before targeted instruction, large proportions considered themselves insufficiently prepared for forensic report writing, malpractice, and physicians' legal responsibilities (5). Systematic reviews of medicolegal education likewise identify recurrent student unpreparedness and describe benefits from formal courses, clinical scenarios, problem-based learning, interdisciplinary teaching, simulation, mock trials, and court-based activities (6,7).

Pakistan is continuing to revise its approach to undergraduate medical education. Current national regulations and curriculum guidance provide a structure for institutions to structure teaching and assessment from a point of intended graduate competencies (8). The leaders of the academic community in Pakistan have also emphasized the need for a collaborative, context-focused, well-resourced curricular reform with feedback in the implementation process (9). International standards similarly favour principles-based, locally appropriate curriculum design rather than a single universal structure (10). A longitudinal bioethics curriculum in Pakistan offers a useful regional precedent: professional content was introduced early, revisited through later years, and integrated with modules and clerkships (11).

Forensic Medicine presents a particular design challenge. If its content is compressed into one academic year, students may not revisit medicolegal principles when they encounter relevant clinical situations. If content is dispersed without clear ownership, progression, or assessment, the discipline may lose coherence and visibility. Before finalising the present model, the authors therefore sought the views of senior and mid-career Forensic Medicine faculty. This article reports those focus group findings and shows how they were translated into a longitudinal five-year curriculum.

METHODS

Study Design and Reporting

A qualitative curriculum development design was used. The stakeholder-engagement approach used was focus group discussions, with the themes generated as a result of these discussions informing a structured curriculum-mapping process. This study did not assess student learning or compare curriculum formats, but rather garnered faculty perspectives and developed a curriculum model. The Consolidated Criteria for Reporting Qualitative Research and the Standards for Reporting Qualitative Research were used as sources of information for reporting. (12,13).

Setting, Sampling, and Participants

The research was carried out in Lahore, Pakistan from September to November 2025. The assistant professors, associate professors, and professors of Forensic Medicine who had experience in teaching undergraduate students and implementing teaching curriculum were selected by purposive sampling. Participants were based in Lahore and were predominantly employed by private medical colleges.

Four focus group discussions were conducted, with five participants in each group (n=20). Each group included one professor, one or two associate professors, and two or three assistant professors. Across the four groups, four professors participated; the remaining 16 participants comprised associate and assistant professors in the stated group-wise proportions.

Recruitment and consent

Informing the potential members via WhatsApp group. The purpose of the research, scope, format of the discussion online, recording and transcribing the discussion, and use of the research results for curriculum development were explained in the invitation. All participants gave informed consent to participate. Those faculty who agreed to participate were provided

with the scheduled date, time and Zoom link. The study was voluntary and participants were told that they could be quoted anonymously as part of the results of the study.

Focus group guide and data collection

A semi-structured guide was used across the four groups. It examined the status of Forensic Medicine in the MBBS curriculum, the advantages and disadvantages of 'discipline-based' teaching, the need to have some elements of the curriculum retained or changed, horizontal and vertical integration, the practical skills expected of the graduates, and the teaching and assessment methods. It also highlighted the risks of integration destroying the identity of the discipline, as well as the barriers to implementation.

The Zoom online discussions took place for 50-60 minutes. The sessions were moderated by Dr. Syed Hussain Raza Zaidi who has previously participated in qualitative research with field notes. The Zoom sessions were recorded and subsequently verbatim transcribed. Each participant was given an anonymous number (P1-P20).

Member checking was completed after transcription and before coding. Participants were given the opportunity to confirm the accuracy of their contributions and to clarify or correct the record. The checked transcripts formed the dataset for analysis.

Qualitative analysis

The transcripts were analyzed thematically using inductive coding. The analytic process involved repeated reading for familiarization, line-by-line coding of relevant passages, comparison and grouping of related codes, development of candidate themes, review of themes against the full dataset, and refinement of theme definitions. Similarities and differences across the four groups were considered, and dissenting comments were retained rather than absorbed into the majority position. This approach was consistent with contemporary guidance that thematic analysis should be coherent with its stated analytic purpose and transparent about the researcher's interpretive role (14).

After themes were finalized, the authors translated them into curriculum design requirements. The qualitative coding remained inductive; Schubert's curricular images and Schwab's practical commonplaces were applied afterwards as interpretive lenses for organizing the curriculum model rather than as predetermined coding categories (15,16).

Reflexivity and Research rigor

The moderator's background in medical education and interest in curriculum integration facilitated focused discussion but also created a potential preference for reform. This influence was addressed by distinguishing participants' recorded views from the authors' subsequent design decisions and by retaining the explicit dissenting position. Credibility was strengthened through four separate focus groups, verbatim transcription, member checking, use of a consistent discussion guide, comparison across groups, and presentation of illustrative quotations. The recordings, checked transcripts, field notes, and coding records provided an analytic trail. Because the available study record does not document independent duplicate coding, the analysis should be understood as an interpretive thematic account rather than a test of inter-coder reliability.

Ethics

All participants were informed about the scope of the research, recording, transcription, analysis, and intended reporting of anonymised findings, and consent was obtained before participation.

Curriculum Development process

The curriculum-development process began only after the thematic findings had been agreed. The authors:

- converted each theme into an explicit curriculum design requirement;
- reviewed existing Forensic Medicine content for relevance to the responsibilities of a contemporary medical graduate;
- identified a core set of forensic and legal medicine competencies that required visible disciplinary ownership;
- mapped competencies horizontally to organ-system modules, pathology, pharmacology, psychiatry, and relevant clinical disciplines;
- sequenced competencies vertically from introductory knowledge to clinical application and practice readiness;
- selected teaching and assessment methods appropriate to each stage; and
- reviewed the map for duplication, omissions, feasibility, and alignment with local medicolegal practice.

The extent and quality of integration were treated as features requiring subsequent evaluation rather than assumptions about the completed timetable (17).

RESULTS

Participant and Discussion Characteristics

A total of 4 focus group discussions were held, with a total of 5 participants. Sessions lasted 50-60 minutes. The setup of the group brought three academic ranks and it was geographically clustered in Lahore and institutionally inclined towards the private sector. (Table 1).

Characteristic	Study information
Study period	September-November 2025
Location	Lahore, Pakistan
Format	Online Zoom focus groups
Number of focus groups	4
Participants per group	5
Total participants	20
Duration	50-60 minutes per discussion
Group-wise rank composition	1 professor, 1-2 associate professors, and 2-3 assistant professors
Institutional profile	Multiple Lahore medical colleges; predominantly private sector
Data source	Zoom recordings, verbatim transcripts, field notes, and member-checked transcripts

Theme 1: Integration was favored, but not uncritically

The dominant view was that Forensic Medicine had remained outside a reform process that had already reorganized many other basic and clinical disciplines. Participants who supported reform saw longitudinal integration as a way to make medicolegal learning more visible at the point of clinical relevance.

"Only Forensic Medicine is remaining to be integrated; all other disciplines have already been integrated." - P1

Support was not unanimous. One participant challenged the assumption that integration was inherently desirable and favored retaining the existing discipline-based arrangement.

"Why do we need to integrate everything?" - P3

"Forensic Medicine should be left untouched." - P3

This dissent became an important design constraint. The curriculum team did not dissolve Forensic Medicine into unrelated modules; it retained a named strand, identifiable leadership, core competencies, and explicit assessment.

Theme 2: Content should reflect contemporary medicolegal practice

Participants distinguished between specialist forensic procedures and the practical responsibilities expected of a medical graduate. They argued that some traditionally taught material should be reconsidered, while greater attention should be given to correct specimen collection, labelling, documentation, preservation, and transfer to forensic services.

"Most of the outdated topics should be removed as doctors send samples to PFSA and medical students need to learn how to label samples properly." - P4

The introduction of the Punjab Forensic Science Agency (PFSA) example focused the discussion on the curriculum from specialist laboratory techniques to preparing graduates to work safely and effectively with forensic agencies. The final map thus focused on specimen identification, specimen packaging, chain of custody, documentation and the reporting interpretation.

Theme 3: Pathology offered a feasible point of horizontal integration

Participants identified pathology as a natural partner because both disciplines address disease, injury, mechanisms of death, tissue changes, and clinicopathological interpretation.

"We can integrate Forensic Medicine topics with pathology easily." - P12

This recommendation led to mapping causes and mechanisms of death, postmortem changes, wound healing and ageing, sudden death, organ pathology, and autopsy principles alongside relevant pathology teaching. The same mapping logic was subsequently extended to pharmacology, psychiatry, emergency medicine, surgery, obstetrics and gynaecology, paediatrics, community medicine, and professional practice.

Theme 4: Integration required safeguards for disciplinary coherence

The supportive and dissenting positions converged on a practical issue: fragmented integration could weaken Forensic Medicine if outcomes were distributed without ownership or assessment. The model therefore used integration to contextualise the discipline rather than to remove it. Faculty leadership, a visible core, defined progression, and assessment weight were treated as safeguards.

Theme	Illustrative evidence	Interpretation	Curriculum response
Integration with caution	P1 supported integration; P3 opposed it.	The majority position favoured reform, but integration was not treated as universally beneficial.	Create a longitudinal strand while retaining a named Forensic Medicine core.
Practice-relevant content	P4 prioritised sample labelling and PFSA-facing responsibilities.	Graduate competencies should reflect actual clinical and laboratory interfaces.	Emphasise collection, labelling, documentation, preservation, chain of custody, and report interpretation.
Horizontal links	P12 identified pathology as an easy integration partner.	Some forensic concepts share conceptual and clinical ground with other disciplines.	Map selected outcomes to pathology and extend the approach to relevant basic and clinical disciplines.
Disciplinary coherence	Dissent raised concern about leaving the subject intact.	Integration may dilute a cross-cutting discipline if governance is weak.	Protect faculty ownership, outcome visibility, progression, and assessment.

Curriculum model generated from the findings

The themes were translated into six design requirements: early introduction, progressive reinforcement, horizontal clinical contextualization, practice-relevant content, preservation of a visible disciplinary core, and explicit assessment. Schubert's images were used to consider content, process, praxis, and learner meaning-making, while Schwab's commonplaces directed attention to learners, teachers, subject matter, institutional milieu, and curriculum decision makers (15,16).

Year	Developmental emphasis	Illustrative learning	Suggested assessment
Year 1	Orientation and professional awareness	Introduction to forensic and legal medicine; Pakistan's medicolegal system; legal duties of doctors; consent, confidentiality, bioethics; basic toxicology; mechanisms and description of injury; introductory death science.	MCQs/SAQs; short cases; structured reflection; basic injury-description task.
Year 2	Applied basic science and structured interpretation	Age and identification; toxicology linked with pharmacology and organ systems; trauma-informed sexual-assault examination principles; capacity and responsibility; head, neck, abdominal, and genitourinary injury; specimen labelling and preservation.	Integrated written assessment; OSPE/OSCE; evidence-preservation checklist; structured case discussion.
Year 3	Advanced reasoning and documentation	Torture and custodial death; firearm and transport injuries; postmortem change; blood and trace evidence; patient-safety law; suicide; sexual-assault documentation; medicolegal report writing.	Case-based assessment; report-writing rubric; OSCE; mock expert-opinion task.
Year 4	Clinical contextualisation and interdisciplinary application	Emergency and surgical injury documentation; psychiatry and capacity; obstetric, paediatric, and safeguarding issues; occupational and public-health law; ENT and ocular trauma; multidisciplinary case conferences.	Clinical case portfolio; interdisciplinary OSCE; structured viva; supervised documentation.
Year 5	Practice readiness and consolidation	Consent and disclosure; death certification; final medicolegal reporting; chain of custody; autopsy principles; poisoning management; expert-witness communication; mock court; supervised exposure to medicolegal services.	Capstone OSCE; death-certificate audit; final report-writing task; workplace-based assessment; portfolio review.

Teaching and assessment approach

The curriculum uses interactive lectures selectively, but places greater emphasis on case-based learning, problem-based learning, simulation, mock medicolegal documentation, interdisciplinary teaching, reflective work, focused workshops, and mock-court activities. Recent reviews support combining case-based, simulation-based, and problem-based approaches, while also cautioning that heterogeneous outcomes limit claims about any single superior method (18). A quasi-experimental study in Pakistan found that delayed scores were lower in all groups, while immediate scores were higher with the flipped-classroom model, thus further emphasizing the importance of repeated exposure and delayed testing for retention (19). Fostered by supporting the use of actual cases, a 2026 simulation-based project provides an example of how structured forensic scenarios and debriefing can provide opportunities for application when actual cases are limited (20).

Assessment is purposefully spread throughout the programme. Selected-response and constructed-response questions, structured viva examination, OSCE or OSPE stations, medicolegal report writing, death certification, reflections, supervised workplace-based observations during senior clinical training, and evidence-handling checklists are suggested approaches.

Proposed evaluation framework

The focus groups established a rationale and a design direction, but they did not test educational outcomes. Prospective evaluation should therefore examine implementation, learning, progression, transfer, and programme outcomes.

Evaluation level	Primary question	Illustrative indicators
Implementation	Was the strand delivered as planned?	Coverage of mapped outcomes; teaching time; faculty participation; assessment blueprint alignment; access to practical activities.
Learning	What did students learn?	Validated knowledge tests; OSCE performance; medicolegal report rubric; death-certification accuracy; evidence-handling checklist.
Progression and retention	Were competencies retained and developed?	Repeated measures by year; delayed post-tests; cohort progression; performance on vertically integrated cases.
Transfer to practice	Can senior students and graduates perform relevant tasks safely?	Workplace observation; internship supervisor ratings; documentation audits; preparedness measures; error patterns.
Programme outcomes	Does the model improve medicolegal practice?	Completeness and accuracy of reports; appropriate certification; chain-of-custody adherence; stakeholder feedback; incident review.

DISCUSSION

This study adds a local faculty perspective to a growing international literature on Forensic Medicine education. The participants did not simply request more teaching. Their discussion focused on where Forensic Medicine should sit, which competencies remain relevant to general medical practice, how the discipline can connect with other subjects, and what might be lost if integration is poorly governed.

The prevailing support for longitudinal integration is consistent with contemporary literature. European curricula recognise forensic and legal medicine widely but vary substantially in time allocation, content, and clinical exposure (1). Studies from India and Nepal describe gaps in hands-on experience, documentation, and practice readiness (3,4). Reviews of medical-law education support formal, clinically contextualised learning and describe a range of active methods that address knowledge, attitudes, and performance (6,7). The present study extends this evidence by showing how experienced faculty in Lahore translated these concerns into a concrete curriculum structure.

This relevance to content theme is particularly important. P4's focus on labelling samples is indicative of a trend for shifting away from simply passing on specialist forensic procedures to preparing students for the tasks they may be required to undertake: recognising a medicolegal situation, documenting findings, collecting and preserving evidence, maintaining chain of custody, communicating with forensic services and interpreting reports. This is in line with the demand for a more competency based education approach rather than a predominantly theoretical approach (3-5).

Pathology emerged as the clearest point of horizontal integration, but the curriculum map goes beyond a single partnership. Forensic learning is linked with Pharmacology when poisoning is taught, Psychiatry when capacity and criminal responsibility are considered, emergency and surgical disciplines when injuries are documented, and obstetrics, paediatrics,

and safeguarding when vulnerability and violence are addressed. This arrangement is consistent with the logic of longitudinal professional curricula, including Pakistan's five-year bioethics model (11).

The dissenting view was analytically valuable. Integration can fragment a cross-cutting subject when students encounter isolated facts without recognizing the disciplinary thread. In a study in 2026 in Pakistan, it was found that 20% of the people within an integrated curriculum were engaged with Forensic Medicine while only a low engagement was observed in later years (21). Its cross-sectional design is not able to explain this pattern as a result of integration, but warns against automatically equating distribution with continuity and motivation. The present model responds by retaining a named strand, visible outcomes, forensic faculty leadership, and assessment across years.

The curriculum should, therefore, be seen as a proposal based on faculty consultation and a theory of curriculum interpretation, rather than proof that longitudinal integration is better than a well planned stand-alone course. The educational value will rely on implementation fidelity, faculty coordination, assessment alignment, periodic revision for change of pathway in the law and service access. The most persuasive future test will be whether students retain and apply medicolegal competencies during senior clinical training and internship.

Strengths and limitations

Four independent focus groups were used, comprising assistant professors, associate professors and professors. The qualitative account was strengthened by the act of recording, verbatim transcription, member checking and inductive coding, as well as by the preservation of dissent. The direct translation of themes into explicit design decisions also makes the curriculum-development process traceable.

Several limitations remain. All participants were Forensic Medicine faculty based in Lahore, and most worked in private institutions. The findings may not represent public-sector colleges, other provinces, students, interns, clinical faculty, curriculum leaders, regulators, legal professionals, or forensic service users. Mixed academic ranks within the same groups may have affected willingness to disagree. The moderator was also a medical educationist involved in curriculum development, creating a possibility of facilitation and interpretive bias. The study record does not document independent duplicate coding. Member checking supports descriptive accuracy but does not eliminate analytic subjectivity. Finally, faculty endorsement establishes perceived need and professional acceptability, not educational effectiveness.

CONCLUSION

Forensic Medicine faculty in Lahore largely supported moving from a single-period, discipline-based arrangement toward a longitudinal curriculum, while a dissenting participant highlighted the need to protect disciplinary coherence. Their discussions shifted curriculum design toward practice-relevant competencies, closer links with pathology and clinical disciplines, progressive learning across five years, and explicit assessment. The resulting model offers a locally grounded basis for implementation. Its success should be judged prospectively through objective measures of learning, retention, practice readiness, and medicolegal performance.

Declarations

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- 1) Muhammad Hassaan; *Conceptualization, Writing – review & editing.*
- 2) Arooj Farooq; *Writing – review & editing.*
- 3) Aatiqa Abbas; *Writing – review & editing.*
- 4) Mansoor Mirza; *Writing – review & editing.*
- 5) Syed Hussain Raza Zaidi; *Conceptualization, Writing – review & editing.*
- 6) Saba Iqbal; *Writing – review & editing.*

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