



FORENSIC MEDICINE; TRANSFORMING TRADITIONAL TEACHING BY INCORPORATING A VARIETY OF SMALL GROUP TEACHING APPROACHES AT MULTAN MEDICAL AND DENTAL COLLEGE

Dr. Attia Sheikh¹, Dr. Farhatulain Ahmad²

1. Assistant Director
Department of Medical Education
Multan Medical and Dental College,
Multan
2. Associate Professor
UNIT-I Department of Obstetrics
and Gynecology
Fatima Memorial Hospital

Correspondence Address:

Dr. Attia Sheikh
Assistant Director
Department of Medical Education
Multan Medical and Dental College
Mailing address: House#3, Block-Y,
Service Road, New Multan Colony,
Multan
attiasheikh@hotmail.com

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ABSTRACT: The subject of Forensic Medicine is a clinical subject requiring a variety of teaching and learning modalities. The Department of Medical Education (DME) at Multan Medical and Dental College (MMDC) coordinated and cooperated with the faculty of Department of Forensic Medicine in order to introduce a few small group discussion strategies as new teaching tools for students of 3rd year MBBS in 2013. These strategies have since been routinely adopted as part of the curriculum for the subject of Forensic Medicine at MMDC. This paper describes the introduction, importance and implementation success and challenges of these modalities in detail.

Key Words: Teaching strategies in Forensic Medicine, undergraduate teaching, small group discussion, PBL

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INTRODUCTION

The subject of Forensic Medicine is taught at the undergraduate level in most of the Asian and African countries because the judicial system of these countries requires that the forensic services should be delivered partly by academic staffs of Government Medical Colleges and mostly by the residential medical officers in the district hospitals. Similarly, the medicolegal services in Pakistan are rooted in the old British Colonial System and as one of my teachers puts it, "it is a modified continental system", which requires all the initial medicolegal work to be carried out by the Casualty Medical Officer (CMO) and be used later in the court as evidence, if the need be. This puts a huge pressure on the MBBS graduate whose only source of knowledge of this field of work is his/her learning of Forensic Medicine as a subject at undergraduate level.

In Pakistan, the discipline of Forensic Medicine is taught to third year medical students as a full year subject-based discipline and according to Pakistan Medical and Dental Council (PM&DC)

there is a list of specific content available to teach using the following teaching strategies:

- Didactic lectures
- Tutorials
- Practical Examinations
- Field visits
- Observation of autopsies and post mortem examinations

IDENTIFICATION OF THE PROBLEMS WITH TEACHING OF FORENSIC MEDICINE

In view of the judicial system requirements of our country, it is extremely important that the curriculum of Forensic Medicine be given a major overhaul and particular changes be brought to the teaching and learning methods used to impart knowledge of this subject at the undergraduate student.

This way student can be equipped better for the knowledge application of this discipline as required by the law as well as the medical practitioner's responsibility.

A recent Canadian report stresses that Forensic Medicine is “an integrative discipline in which decision-making and diagnosis is based on observable evidence. However, opinions are ultimately formed by correlating medical data with the history, scene and circumstances of a case, based on the evidence found.”¹

In view of this, Forensic Medicine is clearly a clinical subject and integrates teaching from many other disciplines including pathology, emergency medicine, surgery and orthopedics. This overlapping of knowledge shows its importance, particularly when a fresh medical graduate goes out to work in the community.

A doctor, from the very start of his/her practice needs to deal with all sorts of emergencies including trauma, rape and poisoning cases. These required medicolegal procedures are only to be dealt by the presiding medical officer/ CMO who is never specialty trained in the field of Forensic Medicine except some exposure in the medico-legal field directly.

However, in the opinion of the authors, the teaching strategies used for this subject, at undergraduate level, are insufficient and the methods used seem quite outdated, for example teaching a clinical topic includes only a didactic lecture to a large class group with not enough discussion, also very limited practical approach is administered to prepare the students for their role in the community.

With emerging trends in newer teaching and learning strategies in medical education there is a dire need to shift the evidence-based paradigm of forensic teaching, paralleling the evidence based teaching of all clinical medicine.

Therefore, when preparing courses in forensic medicine, attention should be paid to materials and methods of learning. This is an extremely important part of the informal curriculum, and it is the faculty's responsibility to correct and challenge specific misconceptions.

There is literary evidence showing student dissatisfaction and less trusting attitude towards the learning need of an *apparently* least practical subject. Clearly this misconception emanates from poor implementation of the teaching strategies and having no awareness among students for the subject importance both from the teachers as well as institutions' lack.³

PROPOSAL OF NEWER STRATEGIES TO IMPROVE TEACHING OF THIS COURSE

As Ausubel says, “The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.”⁴

In other words, Ausubel whose work of meaningful learning is largely based on Piaget's theory of cognitive development believed that understanding concepts, principles and ideas is achieved through deductive reasoning.

Forensic Medicine is largely being taught in a manner that has encouraged only rote memorization in students and therefore creating inadequate knowledge and limited awareness about the subject leading to poor attitudes towards learning and inadequate training.

In addition to the didactic lecture delivery system complimented with tutorials only, the main importance lies with introduction of those teaching and learning strategies that have gained popularity in clinical disciplines and are particularly designed to improve all three domains of attitudes, skills and knowledge of the learner.

These teaching strategies work on clinical and cognitive development of the learner in order to make them critical thinkers, problem solvers with reflective qualities who thus become lifelong self-directed learners. It is most important to equip students with improving such thought process that makes them inquisitive and puzzle solvers because this is the requirement of the forensic field work.

In healthcare education, small groups represent

a teaching situation or environment of growing importance. Recent studies are beginning to unravel the reasons why small groups have a positive effect on learning performance (van Blankenstein et al 2011). These studies site both socio-behavioral and cognitive benefits.⁵

First and foremost, Forensic medicine teaching must be focused on concept based teaching.

CONCEPT BASED TEACHING

Concept-based teaching is a pedagogy based on constructivist paradigm. The constructive learning principle emphasizes that learning is an active process in which students actively construct or reconstruct their knowledge networks. Learning is a process of creating meaning and building personal interpretations of the world based on individual experiences and interactions.⁶ Ausubel's theory of meaningful learning provides a model to help educators understand, implement, and evaluate concept-based teaching.

Even in the didactic lectures, concept based teaching can combine the theories of Cognitivism in which emphasis is on the building blocks of knowledge (e.g. identifying prerequisite relationships of content) and on structuring, organizing and sequencing information to facilitate optimal processing, (theorists who focused their work on this are Piaget, Bruner, Gagne', Lewin, Ausubel etc.) and also the theory of Constructivism which focuses on creating new and situation-specific understandings on previous knowledge (Piaget and Vygotsky).^{7,8}

Also Gagne's nine events of instruction in any lesson plan are easy to follow general guidelines which can be applied to wide range of integrative objectives in the case of complex learning.⁵

Therefore in view of all this background, the authors recommend either or all of the formats of small group discussions, which can be useful for teaching Forensic Medicine at undergraduate level.

Following 3 teaching strategies have been successfully adopted by the Department of

Forensic Medicine at Multan Medical and Dental College and are routinely part of the curriculum since 2013.

- Problem Based Learning (PBL)
- Case Based Discussions (CBD)
- Hospital visits and Bedside teaching

PROBLEM BASED LEARNING (PBL)

PBL sessions have gained most popularity among students and faculty alike at MMDC, in Forensic Medicine since discussions and discovery help change the perception of dryness of the subject.

"A particular goal of this student-centered, problem-based approach is to develop physicians who practice 'science in action' rather than attempting to apply learned formulas to clinical situations." Tosteson et al 1994 PBL is based on several learning theories including Bruner's theory of social discovery. In PBL, learners group together to identify their learning objectives, then through inquiry based approach through which they interact with the world by exploring, manipulating, debating over questions and controversies and finding conclusions.

Dewey described similar approach to social constructivism in his model of learning theory and stressed more on constructivism and Vygotsky argued more about enhanced learning in social interactions.

In addition to all this social and constructive view towards learning Kolb combined the concepts of having an experience, then learning from it by reflecting on it and later trying out what one has learned into a Kolb's Learning Cycle which all best fits in to the PBL pattern.

In such situated learning setting of PBL, the humanistic approach and the behaviorism explained by Carl and Rogers both emphasize enriched learning experiences.

This is how literature also supports that each theory fits to the purpose of PBL of creating a problem solver and critical thinker who is better equipped to work in any medical emergency

environment esp. those dealing with medicolegal issues.

CASE BASED DISCUSSIONS (CBD)

As the Curriculum Committee of MMDC hoped, when they chose CBD that it can be most useful for the subject of Forensic Medicine because it is easier to find stories from real world examples which can be used as cases for learner discussions so has been the prediction proved right. Students enjoy more when they can engage with the characters and circumstances of the story, identify the problems as they perceive the story, and then connect the learning to their own lives.

Forensic cases within the framework of discussion or Socratic dialogue have demonstrated to be motivational for the student to generate further interest in the subject. Such dialectical method between individuals stimulates critical thinking and illuminates ideas. This modality is time consuming therefore is carried out every three months, with open invitation for any and all students and faculty to attend in the auditorium of the institute.

HOSPITAL VISITS and BEDSIDE TEACHING

Contrary to the perception that Forensic Medicine is a science dealing with death investigation only, it is actually a vast discipline teaching topics including injury and poisoning management. All such cases are usually dealt in emergency departments and later, if the victims survive, are shifted to medical or surgical wards accordingly.

It becomes absolutely necessary for students to come directly in contact with such patients to learn about their “stories” in detail that lead to the medicolegal workup. This important aspect of bedside teaching prompted the faculty in the department of Forensic Medicine to make it compulsory part of teaching and training therefore committing students to visit the Iln-e-Siena Hospital and Research Institute and interact with patients. There they also learn to write down the MLC (Medicolegal Certificates) in the hospital setting.

In addition, there are many skills that cannot be taught in a classroom, particularly the humanistic aspects of medicine (Nair et al. 1997; Ramani 2003) and require the presence of a patient, real or simulated.

A research result printed in Times of India, March, 24th 2014, reports similar issue that “due to lack of bedside practical teaching of medico-legal aspects, half-baked and inadequately trained MBBS doctors are being produced in the country. Government expects all types of medico-legal work (MLW) from such doctors when they join as casualty medical officer (CMO) after completion of MBBS degree. A quality medico-legal work cannot be expected from such pseudo-experts.”⁸

APPLICATION OF E-LEARNING MODALITIES

With the evolution in e-Learning it is becoming easier day by day to use the electronic media and now particularly the online teaching and learning strategies are used to reach out to students. There are a number of e-Learning modalities, some or all of which may be used within the teaching learning environment of any clinical discipline, the list is as follows:⁹

- Asynchronous podcast or vodcast
- Synchronous audio or video (e.g. Slideshare)
- Blended learning
- Chat/video conferencing
- Computer aided learning
- Computer based tests
- Educational online games/experiences
- ePBL
- Online collaboration (Wikis, Blogs and Interactive Whiteboards)
- Online discussion forums
- Repository or hypertext

In our setting, however, limitations in terms of human and financial resources impose a great resistance in implementation of any of these modalities but it should be kept in mind that “starting from simple and moving on to more sophisticated systems (over a matter of years), will boost the process of learning and student motivation, equip the faculty with enhanced skills

in the use of computer-based education and assist the administration in efficient educational management.”¹⁰

There are many Pedagogical perspectives or learning theories which help with designing and interacting of the e-Learning programs including social, emotional, cognitive and contextual perspectives of learning and currently the Department of Medical Education (DME) at MMDC is working towards bringing e-Learning as a teaching modality at the institute in many departments.

This can be particularly applicable in Forensic Medicine as there is an unlimited wealth of online resources and video and audio clips in many institutions’ learning repositories. Such repositories can be shared for teaching and learning purposes. A digital library and a vast collection of DVD’s on different topics are freely available for the students here at MMDC. Also with the advent of virtual autopsies the need for e-Learning resources either as online or offline components cannot be stressed enough.

It is almost impossible to teach the subject of Forensic Medicine without the aid of multimedia and without sharing of important photographs and videos with the students. Another inexpensive way is to encourage students to search online for interesting cases and share with their class fellows. Also if researching and keeping a log of such cases be made a compulsory part of curricular activities then it might help with generating the interest and increasing motivational level for learning the subject. (ARCS model of motivational design by Keller) Additionally, the efficacy of the Computer Based Teaching Module (CBTM) in medical education has been validated by several randomized controlled trials in the past decade. Compared with the faculty-led lecture, small-group format or self-study, the CBTM has been found to have improved or at least comparable teaching efficacy.¹¹

CHALLENGES

Forensic medicine has been taught apparently

‘successfully’ with the traditional method of teachings well into 21st century and despite the debates on the need for revamping the curriculum and stressing on its importance at the undergraduate level, not much effort seems to be practically implemented in this regard. There is strong human resource deficiency in this field esp. in teaching institutions throughout Pakistan. Currently less than 20 FCPS trainees are enrolled with CPSP. To change the mind sets of those already in the traditional frame of teaching is hardest although not impossible. Secondly, there is the ever present financial threat. In order to introduce the small group format in any institute, it is like opening up a Pandora’s Box of financial crises which a relatively new institute like MMDC is still facing.

Some of the problems are political tug of war between the clinical departments, in giving the due autonomy to another e.g. not allotting the clinical cases of forensic significance to the Forensic experts even when it is the need and training of those to manage such cases. Thereby using the bedside teaching in hospital setting becomes difficult to manage by the faculty of Dept. of Forensic Medicine as it is mostly hogged by medical/surgical specialties.

Forensic Medicine is part of Forensic Sciences in the West and is taught at post graduate level divided into multiple disciplines. In those courses PBL and CBD are preferred methods of instruction in addition to lectures and hospital or field visit (like crime scenes settings) for situated learning.

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“You are free to do good or bad but you will face the consequences.”

Shuja Tahir

