

Perceptions of MBBS Students at Liaquat University of Medical and Health Sciences Jamshoro on the use of Knowledge of Human Histology Acquired during Preclinical Years in their Clinical Years

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ABSTRACT

OBJECTIVE: To evaluate clinical significance of histology among undergraduate medical students and to identify areas of improvement in its teaching methodology.

METHODOLOGY: A cross sectional study with a structured questionnaire designed on Google form with demographic details, rating scales, multiple choice questions and open end suggestions was distributed among students of MBBS at Liaquat University of Medical and Health Sciences Jamshoro in year 2025.

RESULTS: Among 220 students who participated, 73.6% were recognized to apply prior histological knowledge in clinical practice. About 58.2% were able to interpret histopathological images. 91.89% suggested integrating histology with histopathology through clinical cases, real life patient images etc. For the rest who found histology difficult, they suggested to modify working protocols in lab, utilize visual tools and apply interactive teaching formats with active participation.

CONCLUSION: Education of histology should be enhanced with through feedback of students and proper investment upon upgraded methodologies for a better understanding since it lays down a crucial basis in medical diagnostics.

KEYWORDS: Histology, Histopathology, Clinical knowledge

INTRODUCTION

Over the years, subject of histology in MBBS curriculum has been holding an integral portion in regard to its importance in diagnostic grounds¹. Though in the duration of MBBS, the subject is taught as a part of mere curriculum yet it does not need any distinctive emphasis to state that histology forms a crucial foundation for Pathologists to establish a sound diagnosis on the basis of specimen findings in a tissue. As a matter of discussion, histology establishes valuable foundation for diagnosticians to differentiate between a morphologically normal tissue and a diseased tissue, providing major information which contributes to the formation of prognostic plan². However, the conflict of interest arises as to how to inculcate the component of histology in pre-clinical years in the utmost insightful manner possible, given the limited credit hours and available resources. Around the globe nowadays, integrated modules are introduced into the curriculum to ensure a co-related study pattern of all subjects³. The significant aim is to develop a suitable and strong understanding of histology among the students in such a way that they take active interest in recognizing the constructive future scopes the subject of histology holds for them

to pursue. The traditional categorization of histology comprises two parts; delivery of lectures in classroom and study of tissue specimen under microscope in laboratory⁴. In the integrated system, general histology is taught with Foundation module and systemic histology is taught respectively with the ongoing module. Additionally, assessment of histology is done through Best Choice Questions, OSPE and Viva in exams to make sure that a comprehensible cognition has been cultivated in the minds of students. But to what extent do students acknowledge the gravity of this subject and recognize its core spirit in their MBBS Curriculum; this remains an arguable topic till date. Researches have been made upon the utmost effective ways of teaching histology that not only help students to fathom out histology better but also to withhold its influence in clinical years. Yet the perception of students upon various challenges they have to face in the provided resources has been under exploration in order to utilize the allocated time period for this subject with the instructors in pre-clinical years as efficiently as possible⁵. With the evolving methods day by day, several changes have been brought globally in academics to unfold a productive learning domain. Of the most vital ones is the execution of virtual microscopy in classrooms (study of tissue specimen via microscope connected to slides). This particular method has been proven worthwhile in dealing with a mass of minds with efficacious strategy. Besides, flipped classrooms⁶, pre-read materials and case-based learning⁵ have shown promising results in unleashing students' utmost potential to learn histology better

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than before. Though the subject itself does not easily fascinate most of the people, still through every incoming advancement, it ought to be made conceivable for every learner to realize the pivotal floor established by this subject in the curriculum of MBBS and further beyond. All these facilitating tools need to be upgraded with feedback evaluation alongside to involve students in active participation and learning⁷.

METHODOLOGY

This analytical study was conducted at Liaquat University of Medical and Health Sciences Jamshoro, Pakistan after ethical approval from the institutional research and ethics committee of Liaquat University of Medical and Health Sciences. The study involved undergraduate MBBS students from Third year, Fourth Year and Fifth Year who had reached their clinical years of curriculum past the histological subject. Feedback and evaluations were collected using a structured questionnaire designed on Google Form that consisted of five sections. The first section included demographics of participants; name, age, gender, discipline of study, batch, city of residence, email address and informed consent. The other four sections comprised five questions on each page based on YES/NO response, rating scale of 1 to 10 and multiple choice questions to assess knowledge and resultant outcomes of experience of the students. Results were analyzed using Google Form evaluations and graphs⁸.

RESULTS

Through Google Form conduct among students of MBBS at LUMHS, 220 responses were gathered from 3rd Year, 4th Year and Final Year altogether. The response rate turned out to be 100%. Out of 220, 47.7% participants (105 responses) were male while 52.3% (115 responses) were female. Approximately 27.3% belonged to third year, 19.1% to fourth year and 53.6% to final year.

Almost all the participants expressed to have developed an understandable concept and meaning of the terms Histology and Histopathology while they stepped into the clinical years of their study. On the flip side, 73.6% (162) described to be able to utilize prior knowledge of histology beyond the pre-clinical years whereas 26.4% (58) were not able to apply the concepts of histology any further. Of the 26.4% who failed to do so, the foremost reason which caused them to lag behind was lack of ability to identify and recall terminologies and associated structures.

Other commented hurdles included insufficient knowledge of basic Histology/Anatomy on the part of students, failure to interpret microscopic images, lack of active communication with instructors during lab practical and inability to recall histology without a prior revision before studying any topic of Pathology.

Whilst inquiring about interpretation of histopathology in clinical years, 58.2% (128) acknowledged to have

been able to identify histopathological images in Pathology. 41.8% (92) went in disagreement to this matter because of facing difficulty in appreciating and differentiating the histopathological features, in identifying the histopathological image under microscope, in possessing insufficient knowledge about normal histology of the tissue and in studying topics whose histopathological slides are not available or shown in lab practical.

Participants were also asked to rate on a scale of 1 to 10 about beneficial extent of histology during exams, PBLs and clinical years. Upon asking the participants about troubles which were faced while studying histopathology in clinical years, 13.6% (30) depicted to not facing any difficulty at all. The reasons why rest of the participants found histopathology challenging are mentioned in the discussion and analysis. Participants were also asked to rate their retained knowledge of histopathology and morphological features of a disease on the basis of prior knowledge of histology as to what extent it helped them. **Chart 1** summarizes the response of participants in their opinion.

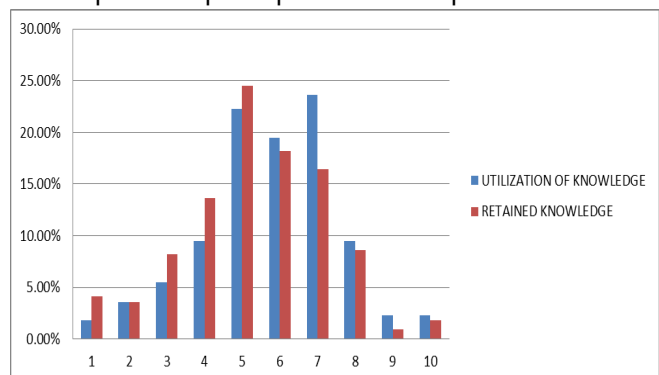


Chart 1: Rating scale of extent of utilization and retained knowledge of Histology and Histopathology

83.2% (183) participants admitted to be able to implement specific terminologies of histology in histopathology whereas 16.8% (37) participants denied being capable enough. For grading the modules in which basic knowledge of histology turned out to be beneficial and which system turned out to be difficult in histopathology, **Chart 2** provides the final outcomes respectively.

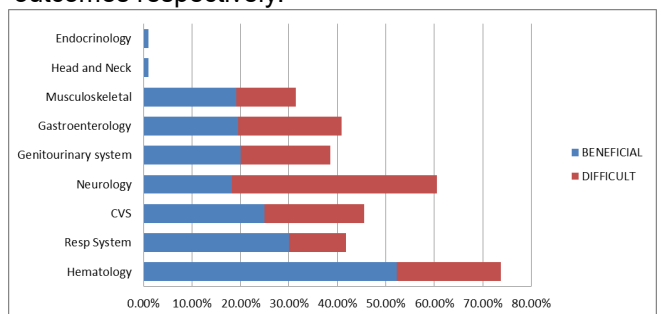


Chart 2: Beneficial extent and Difficulty extent in histology/histopathology of integrated systemic study

Regarding perception of participants towards worth of structuring of practical manuals and drawing diagrams, rating was conducted, the results of which are demonstrated in **Chart 3**.

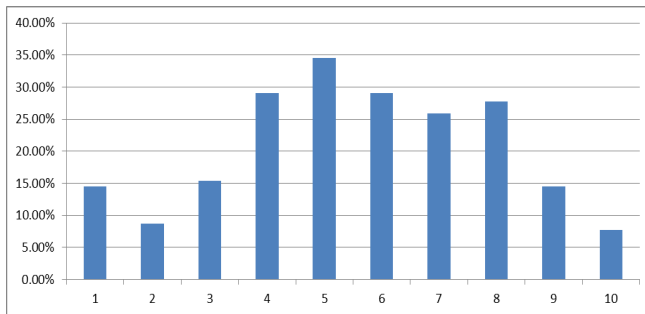


Chart 3: Rating scale for perception towards usefulness of Practical Manuals and Diagrams

Before taking closing remarks about further opinions, participants were queried about relevant measures to be taken in pre-clinical years in respect to teaching clinical examples along with histology, integrated correlation of histology with histopathology [9] and observing normal and diseased tissue specimen at the same time to which 91.9% of the participants agreed for implementation.

DISCUSSION

Attitude of students towards how they perceive emphasis on histology in MBBS contribute to major areas of possible improvement needed to be brought with application of modern tools and techniques. Of the 26.4% who failed to flourish the knowledge of histology in clinical years, the foremost reason which caused them to lag behind was lack of ability to identify and recall terminologies and associated structures. Other commented hurdles included insufficient knowledge of basic Histology/Anatomy on the part of students, failure to interpret microscopic images, lack of active communication with instructors during lab practical and inability to recall histology without a prior revision before studying any topic of Pathology. All these obstacles if not drastically, then must have significantly compromised the overall progress of academics. Not only this, but it also seemed to pose crucial issues while preparing for internal medical licensing exams like USMLE, PLAB etc.

Related to interpretation of morphological and microscopic features of histopathology in clinical years, 41.8% of the audience encountered inability to identify the slide under microscope, difficulty in appreciation and differentiation of characteristics and lack of access and availability of specimen in the labs. With the lately imposed teaching methodology at LUMHS, opinionated complexities about the subject comprise poor basic knowledge of general and systemic histology, lack of integration between class lectures and lab practical and inability to study effectively under microscope. The core reasons which are raising these complexities are the actual areas

where beneficiary efforts are required. These areas involve lack of active participation and personal interest, unavailability of standardized teaching tools and techniques, insufficient lab exposure and equipment and improper integration between lectures and labs.

To improvise these shortcomings, students suggest increasing comprehensive focus on lab practical at regular intervals besides delivering the verbal knowledge through slides, eliminating journal writing and shifting efforts to microscope handling, highlighting differentiating features with more visual examples for better recognition, showing real life histopathological images of patients available in the set-up for developing diagnostic skills, using atlas and newer visual tools for teaching, conducting individual assessment and monitoring through OSPE, CBL, good graphic visuals and more specifically under microscope to make sure maximum learning capacity with active participation, comparing the slides of normal tissue alongside the diseased tissue[10], centralizing the lab tutorials on conceptual explanation rather than simply reading the slides, introducing quizzes for the students so that they can recognize where do they lack. Studies have shown appreciable response towards a blended learning approach with flipped classrooms, visual microscopy, problem-based learnings etc¹¹.

According to the students, basic histology should be taught in the most retainable way and should be recalled and revised every time while discussing the abnormal tissue. Similarly, the core pathogenesis of any disease should be explained in such a way that pathological findings are well understood. A cross sectional study in Eastern part of India demonstrated that Lab tutorial can be split into two segments, the initial one for the students to discuss among each other about the topic and the other one dedicated to relevant lecture and microscopic observation¹². Various methods should be used by the demonstrators to make tutorials engaging and interactive. Certain procedures of extracting the live tissue and preparing the specimen for slides must be taught and shown to the students so that they are made aware of every bit of importance the subject of histology holds. Moreover, the current cases coming into labs should also be brought in the attention of students by assigning them to study and explore the histological and histopathological images related to the cases¹³.

CONCLUSION

The responses generated through this research indicate not only the demerits on the side of students while they counteract histology, but also provide a broad vision to the gaps where bridging is needed to further enhance the curriculum for histology. Histology as a subject might hold a less proportion than others, but the attitude of students itself is evocative to determine its significance. In the light of the received

feedback, it was distinctive that insufficient knowledge of histology poses actual fundamental pitfalls in the academic learning of other related subjects as well. With the proposed methods of improvement in the discussion, students can be saved from consumption of time and effort which are spent in struggling with pictorial hurdles of histology. Through appropriate application of resources with integration, interaction and active feedback response, students can bring out their utmost challenging potentials which would pave their path for a better understanding of curriculum and its application in clinical years of MBBS.

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AUTHOR CONTRIBUTION

Memon S: Final approval

Gul F: Data analysis

Bhatti KA: Concept of study

Prem V: Data collection

Shaikh H: Acquisition of data

Memon SS: Grammatical correction

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