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Assessment of Medical Students knowledge and perception about Importance of Forensic Medicine in crime investigation.

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ABSTRACT... Objectives: The study aimed to know the prevalence of scientific knowledge among medical students about the essentiality of postmortem examination. **Study Design:** Cross-sectional Observational Survey. **Setting:** Five medical colleges of Pakistan. **Period:** December 2019 to February 2020. **Material & Methods:** A questionnaire were designed to access the level of students' comprehension about importance of post-mortem examination, collection of samples, autopsy report writing and courses taught in Forensic curriculum. **Results:** Most of the students 553 (79%) have shown satisfaction from teaching and training in Forensic Medicine. 252 (36%) suggested the need to add case base studies (CBL) to improve the teaching methodology. 546 (78%) students were in favor of conduction of autopsy to know the unnatural circumstances under which death occurred. 154 (22%) of them stated that SGDs are good teaching method for learning injury interpretation and 399 (57%) highlighted that there should be more teaching hours for autopsy visits and medicolegal clinics. **Conclusion:** Students are well aware about the importance of Forensic Medicine and conduction of autopsy. They are reluctant to opt Forensic Medicine as a medical carrier because of limited scope and court inquires.

Key words: Autopsy, Forensic Medicine, Perception, Postmortem Examination, Undergraduates,

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INTRODUCTION

Forensic Medicine is all about interpretation of injuries and medicolegal report writing to help the law enforcing agencies. In cases of physical assault, accidents and poisoning medicolegal examination are conducted to determine the nature of injuries, type of weapon used and poison.¹ Examination also helps to determine the intention of the assailant by examining the nature and severity of injuries. In cases of unnatural death postmortem examination is conducted to determine the cause of death.²

Conducting autopsy and medicolegal examination is the obligatory skills that every doctor must have.³ The undergraduate curriculum must have sufficient courses for teaching and training undergraduates these skills. The curriculum should be well equipped

with application of Forensic Medicine and Clinical Toxicology.^{2,3} According to Pakistan Medical and Dental Council, medical curriculum should cover medicolegal aspects of postmortem changes and interpretation of injuries as a legal requirement for judicial system of our country.⁴ In routine 3rd year MBBS students are rotated in medicolegal clinics for observing autopsies and medicolegal cases. The objective of this rotation is to help students to understand various medicolegal procedures, injuries and postmortem changes. Students also observe and assist in management of poisoning cases. They also learn how to differentiate poisoning symptoms from other pathological conditions thereby making them a better clinician in future. The main objective of teaching Forensic Medicine & Clinical Toxicology is to build the competencies of the undergraduate medical students to interpret medico-legal injuries, issue

death certificate, properly collect, preserve and dispatch samples after conduction of an autopsy to find out cause of death, time since death and manner of death.⁵ The study was conducted to know the reason of decline of pupil to opt it as a career and to know about the usefulness of the subject in solving unnatural death issues.

MATERIAL & METHODS

A questionnaire based cross-sectional study was conducted in public and private medical colleges of Punjab and Khyber Pakhtunkhwa in a month of December 2019 to February 2020. The medical colleges participated in the study were two public and three private medical colleges including Northwest School of Medicine, Khyber Girls Medical College, from Peshawar KP, M Islam Medical College Gujranwala, Khawaja Muhammad Safdar Medical College Sialkot, CMH Lahore Medical College, Lahore. Ethical approval was obtained by the authors from their respective institutions.

Inclusion Criteria

Volunteer participation of 3rd and 4th year MBBS students.

Exclusion Criteria

Incomplete forms and forms filled with extreme values (without reading questionnaire) were excluded from the study. A research instrument was developed and refined after pre-tested on 10 random students. The research tool comprises of twenty questions related to the course content, teaching methodology, and postmortem examination. Confidentiality of identity was maintained, adequate time was given as to get more reliable data from them. Students were given a questionnaire and asked to fill the form anonymously. The purpose and objective of the study was communicated to the students. Minimum students sample size was determined by using WHO calculator i.e 320. Simple random sampling technique was used because the number of medical students were in thousands and it was not possible to study and evaluate reasons for each choice. For the reason of limited resources and constrain of time a minimum estimated sample size was determined

representing the entire medical students of KPK and Punjab who have already studied or studying the subject. 857 students returned the filled questionnaire proforma, out of which 157 were found incomplete. 700 undergraduate medical students proforma were included in the study which were complete in all aspect. Data obtained was collected and compiled on MS-Excel by co-authors. Statical analysis of data was done on SPSS 20. Testing of p-value cannot be done as it was a descriptive cross-sectional study.

RESULTS

Out of 900, 857 students returned the filled questionnaire proforma, after scrutiny 157 forms were either incomplete or not filled properly were not considered for the study analysis; that makes the overall response rate of 81.6%. The data from each medical college was collected by the nominated author/s. The data collected from each of the medical college is shown in Table-I.

300 male and 400 female students participated in the study. The data obtained was tabulated in a Microsoft Excel and analyzed statistically to determine number and percentage of participants agree or disagree with the statements in the questionnaire. The data obtained is shown in Table-II. Most of the students had a positive attitude towards the integrated modular system, which they felt provides good clinical relevance (75%) and understanding of Forensic Medicine (73%). It allows them to better achieve their learning objectives (89%), while promoting critical thinking (68%), self-learning (68%) and communication skills (66%). They considered it to be a student-friendly and interesting way of learning (67%). Majority of them (76%) want their colleges to continue with the integrated modular curriculum. (Table-II).

The results have shown that 546 (76%) students were in favor of medicolegal autopsies, 89% male and 73% females had recommended that postmortem examination must be performed to determine the cause of death. 465 students said it would be good to assist in autopsies.

	Public/ Private	Institution	M:	F	No of participants	Classes	
			1:	2.2		3 rd	4 th
1	Private	CMH LMC, Lahore	96	74	170	105	65
2		M. Islam Medical College, Gujranwala	21	35	56	45	11
3		Northwest School of Medicine, Peshawar	56	89	145	78	67
4	Public	Khyber Girls Medical College, Peshawar	00	180	180	90	90
5		Khawaja Muhammad Safdar Medical College, Sialkot	56	93	149	81	68
			229	471	700	399	301

Table-I. Number of participants from different medical colleges:

Sr. No	Question	Number and Percentage (Yes)		
		Total 700	M 229	F 471
1	Conduct autopsy in case of unnatural death	546 (78%)	203 (89%)	343 (73%)
2	Send samples to pathologist and chemical examiner	476 (68%)	164 (72%)	312 (66%)
3	Autopsy is useful in determining the cause and manner of death	434 (62%)	146 (64%)	288 (62%)
4	Forensic Medicine must be removed from undergraduate curriculum	98 (14%)	68 (29%)	20 (0.5%)
5	Number of autopsies you watched were enough for learning	280 (40%)	103 (45%)	177 (37%)
6	SGD are good teaching method for learning injury interpretation	392 (56%)	193 (49%)	199 (51%)
7	Opt Forensic Medicine as carrier	161 (23%)	76 (33%)	85 (18%)
8	Dissection is disrespectful to human body	576 (81%)	149 (43%)	427 (2%)
9	Medical students should assist during autopsy	465 (77%)	117 (26%)	348 (74%)
10	It helped me in understanding pathology	530 (76%)	176 (76%)	154 (77%)
11	Autopsies should be replaced by digital autopsy	541 (47%)	111 (48%)	371 (79%)
12	Need to revise curriculum	246 (35%)	78 (78%)	168 (84%)

Table-II. Some responses to questions by students:

They have shown satisfaction about teaching and training in Forensic Medicine. 354 (51%) said Role play strategy for understanding court proceeding was helpful whereas 476 (68%) gave opinion that Toxicology experiments are sufficient for undergraduate teaching but most of them don't know where to send samples for chemical examination. 246 (35%) recommend that curriculum should be updated whereas 148 (28%) were not in favor of Forensic teaching at undergraduate level. The study had showed that students were reluctant to adopt Forensic Medicine as a career. Females students were not interested to specialize in it. Most of the students were of the view that they don't want to go to court for any evidence recording.

DISCUSSION

The study was conducted to access the apprehension of undergraduate medical students about application of Forensic Medicine and

Legal Medicine for the execution of justice in the civilized society. The study also ingresses the vantagepoint of students towards application of Forensic Medicine and choosing it as a carrier.

This study had clearly showed that most of the students were well aware and well informed about the needs and usefulness of post-mortem examination. Students gave opinion that despite medicolegal autopsies; medical autopsies must also be carried out in institutions. These results were consistent with the study by Brazil and Conran et al at Ohio (USA) where 85% of the pupil think that postmortem examination teaching must be essential. The advantages as they mentioned were that it helped in understanding of anatomy in a more clinical context and helped to understand dry concepts of pathology.⁶ Although it is evident that it never happened, most of the students had never attended postmortem examination rotation during their academic period. 78.33%

of participants agreed that for autopsy, medical students must have sufficient knowledge about applied anatomy and applied physiology. Our results were consistent with the findings of Bagga IS and Benbow EW et al, in which 54% students agreed the need of autopsy whereas 80% of participants disagreed in the study by Bharathi et al.^{7,8}

In our study, 68% of the students agreed that there is utility of viscera for diagnosing diseases by histopathological examination and toxicological analysis whereas in study conducted by Benbow EW and Jadav JC et al found that 99% and 96% of their participants agreed for the same respectively.⁸ In our study, 62% agreed that conducting post mortem examination will help in reaching the culprit of crime; however, Rautji R et al found 97% agreed to the same question.⁹

60% of the students recommended that medical students should watch more autopsies. This is in contrast to other studies by Bagga IS, Jadav JC and Amaley KD et al who found 47.7%, 74% and 87.67% of their students were not in the favor that more autopsies should be witnessed by medical students respectively.^{7,10,11} For the question 'if given a chance would you choose not to watch autopsy at all; in our study 40% said 'No' 60% answered "yes" whereas only 16% and 17% choose "not to watch autopsy" in studies by Brieger WR and Ekanem et al respectively.^{12,13} 81% students were of the opinion that post mortem examination causes disfigurement of body. This is in contrast to other studies who gave variable response of 65% and 27% by Bharathi M and Ehsan R et al respectively.^{14,15} 82% of the students were of opinion that they learned subject after witnessing autopsies. Bagga IS et al⁷ found that in their study 80.7% learned after witnessing autopsies, whereas 97.66% gave positive response in the study by Nihal Ahmad et al.¹⁶

This study also highlighted the reason why young doctors are not choosing it as a carrier. It also shows a positive attitude of medical students about the importance of this subject. Students feel that in Pakistan this subject is undermine

and Government should give incentives and provide more opportunities to doctors to choose it as a carrier. There is a need to stop practicing and referring unnecessary autopsies, autopsies should be replaced by digital autopsies. Dissection of cadaver should only be performed where digital autopsy failed to revealed the cause of death.

CONCLUSION

From the study we have concluded that current curriculum of Forensic Medicine needed to be improve to produce graduates who can independently perform autopsy and interpret injuries and aid law enforcing agencies for furthering of justice in the society. The findings of our study showed that medical students have keen interest in learning autopsy techniques. They are well aware from its importance and suggested to improve the facilities. We also suggest to revise the forensic curriculum by increasing the number of teaching and practical hours thereby the students will be able to make observations and come to conclusions in criminal matters or Medico-legal cases.

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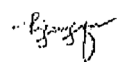
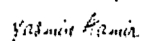
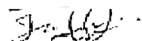

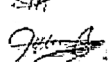
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