

ASSESSMENT OF KNOWLEDGE ON FORENSIC ANATOMY AMONG PRECLINICAL MEDICAL STUDENTS

MANAH CHANDRA CHANGMAI^{1*} and KASTURY GOHAIN²

¹*International Medical School, Management and Science University,
40100 Shah Alam, Selangor, Malaysia*

²*Faculty of Business Management and Professional Studies, Management and Science University,
40100 Shah Alam, Selangor, Malaysia*

**E-mail: manahchangmai@gmail.com & dr_manah@msu.edu.my; HP: +60163684375*

Accepted 28 October 2016, Published online 21 December 2016

ABSTRACT

Anatomy is one of the key disciplines in forensic science. The knowledge of anatomy is very important for a medical examiner or forensic expert. If there is any internal damage in the corpse and the forensic experts have no idea, then they may mistake it for a normal structure. In Malaysia, forensic anatomy is not included as a subdiscipline in the present preclinical medical curriculum. A preliminary study was undertaken to assess students knowledge on forensic anatomy and its scope. Primary data was collected through survey method from 66 students. A structured closed questionnaire was used to collect data from first year preclinical students of medical programme of International Medical School of Management and Science University. Majority of the students had knowledge on forensic anatomy and its scope. The students were aware of forensic anatomy and they had information on this subject from various website sources. The data was analyzed using SPSS version 20. The available results are discussed in the light of available literature. The results indicate the students are eager and enthusiastic in exploring the opportunity on learning more about forensic anatomy and its career prospects.

Key words: Forensic anatomy, students assessment, awareness, knowledge, forensic experts

INTRODUCTION

Forensic science is a multidisciplinary subject with various sub disciplines. Forensic team are consulted in crime scene to investigate the case often medico legal. This forensic experts team consists of specialists from different disciplines. To investigate the crime scene, proper knowledge of their particular subject is essential. Anatomy is one of the key disciplines in forensic science and adequate knowledge of anatomy is very important for a forensic expert (Finnerty, 2010). In the presence of any internal damage in the corpse, forensic experts must have adequate knowledge of anatomy, otherwise may be mistaken for a normal structure. Forensic anatomy is one of the upcoming sub-disciplines in anatomy. As a subdiscipline it is not included in the present preclinical medical curriculum.

In the recent times, there is career prospect in the field of forensic sciences. According to the

United States Bureau of Labor Statistics, the career opportunities for forensic anatomy (anthropology) is expected to grow by about 21 percent between 2010 and 2020 (American Board of Forensic Anthropology). Forensic anthropology also underwent progressive changes before emerging as legitimate discipline (Golda, 2010). Advances in scientific technology in examining crime scenes have turned forensic science into a high demand and rapidly growing career field. In Malaysia, only the police, health ministry forensic experts and chemistry department are involved in assisting the court with expert testimony and forensic reports (Forensic Science Society of Malaysia). At present, the number of available skilled and experienced forensic experts is low. This means that those who are working for government departments are likely to receive positive employment prospects and benefits. The present study was undertaken to assess knowledge of preclinical medical program students on forensic anatomy.

* To whom correspondence should be addressed.

METHODOLOGY

The study population consists of students from Bachelor of Medicine and Bachelor of Surgery (MBBS) programme studying in International Medical School, Management and Science University, Malaysia. A total of 66 students participated in the study. The purpose of this study was to find out the awareness and knowledge of forensic anatomy. A structured closed questionnaire was used to collect data from first year preclinical students of MBBS programme using convenient sampling technique. The obtained data was analyzed by using SPSS version 20.

RESULTS

Of the 66 respondents, 14 were males (21%) and 52 females (79%). The age of the first year MBBS students range in between 20 to 25 years. The findings indicated that 62% of the students have slight knowledge on forensic anatomy. But it has been also seen in the findings that sufficient knowledge on forensic anatomy lacks among the students (Figure 1). This may be due to non inclusion of forensic anatomy in preclinical medical program curriculum.

About 88% (Figure 2) of the students have agreed to the opinion of reinforcing forensic anatomy in the beginning of the medical programme. That shows high interest of the students to go into the depth of forensic anatomy. Majority of the respondents (89%) considered research opportunities are high with forensic anatomy discipline. Most of the participants (82%) were enthusiastic to choose forensic anatomy as a career in future.

DISCUSSION

The findings of majority of respondents (62%) having slight knowledge and only 8% had sufficient knowledge on forensic anatomy, may be due to non-inclusion of forensic anatomy in the preclinical medical curriculum. Drake (1998) emphasized the need for an integrated model in curriculum. The basic concepts, connection between basic knowledge and the clinical setting should be clarified by dissemination of knowledge by the instructors of anatomy and other disciplines. Johnson *et al* (2012) revised their curriculum in anatomy with the current thinking in medical education into a more interactive and clinically relevant class. Zaid *et al.*, 2010, commented that surgical skills training in preclinical years in medical curriculum will improve the confidence and generates curiosity in learning skills of surgery among the students. This will have profound impact on quality of patient care and safety. Fauzia *et al* (2016), reported that California University of Science and Medicine, School of Medicine (CalMed-SOM) has changed their way of teaching anatomy with a new curriculum that will help the students during discussion of clinical cases. These indicate similar changes in relation to forensic anatomy in curriculum may benefit the students. One of the studies indicated that teaching of anatomy facilitated by surgeon improved long-term retention of surface anatomy (Sarkis *et al.*, 2014). According to Rafferty (2007) one should come up with a core curriculum approved at national level giving more preferences to different basic clinical skills for undergraduate medical programme. Sugand *et al* (2010) commented that the students will be benefited when they are exposed to cadavers who

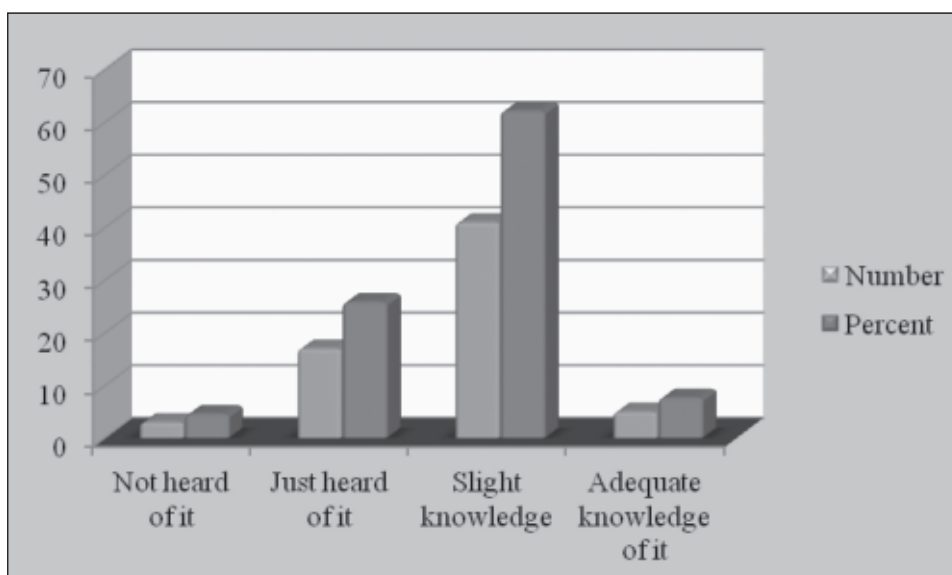


Fig. 1. Awareness of forensic anatomy.

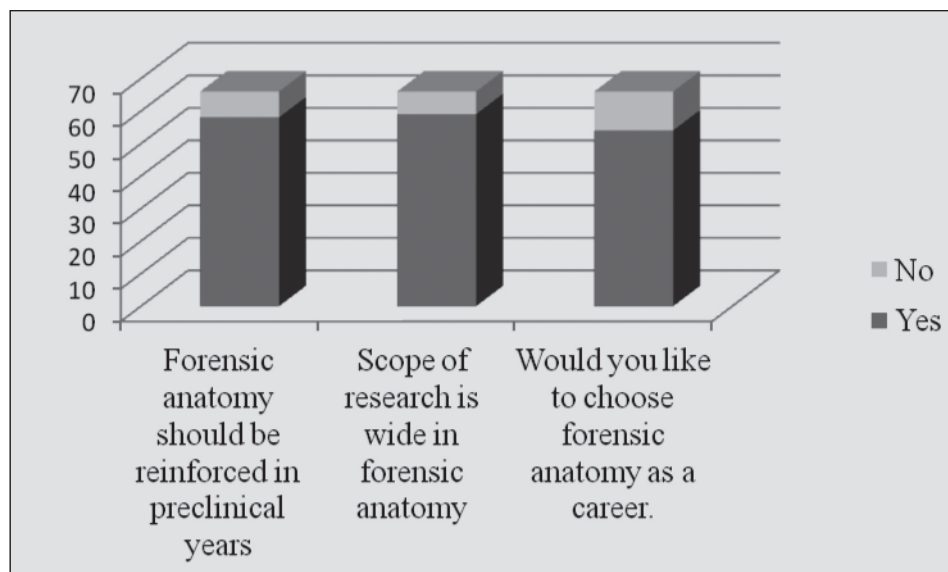


Fig. 2. Students perception on Forensic anatomy and its scope.

recently died accompanied by their medical histories, diagnosis supported by histopathology for learning anatomy. This is also applicable to enhance their knowledge in forensic anatomy.

According to Egwu *et al* (2014), many science departments have changed their structural and technical establishment to accommodate recent advances in modern anatomy. Anatomy as a major discipline in biomedical science is incorporated with experimental and clinical science not limited to gross anatomy and histology but also to cellular and molecular biology. The inclusion of forensic anatomy in preclinical curriculum is likely to increase their interest in learning this discipline and therefore to develop as their specialty in future. This was indicated as 88% of the students have agreed to the opinion of reinforcing anatomy with forensic anatomy in the beginning of the medical programme. This can help the students to go into the depth of forensic anatomy. A multidisciplinary approach has been advocated in teaching ethics involving preclinical, medical education unit and clinical disciplines as per WHO/SEARO facilitators' guide (Anshu, 2011). New strategies have been proposed in recent years for the improvement of quality in teaching anatomy to undergraduate students by focusing on the multimedia-assisted learning, using 3D computer simulations, medical imaging and dissection videos (Ahmed *et al.*, 2010). Evans & Watt (2005) recommended that during specialist rotations relevant anatomy topic should be taught which will help the students during clinical training. Emphasis should be given to integrate basic science and clinical anatomy to have great motivation in understanding the topic and relate it with clinical condition.

In the present study, the research opportunities in forensic anatomy are considerably high, as 89% of the respondents were interested in further study. According to Desai (1976), there should be new ways introduced in learning anatomy. New innovative techniques inculcating clinical subjects with anatomy should be implemented in the clinical departments, autopsy room and the hospitals apart from dissection hall. Brenton *et al* (2007) reports that there are significant changes in teaching anatomy due to technological developments in the areas of three-dimensional modelling and computer assisted learning. McCuskey *et al* (2005), in his study suggested that the institute should look upon researchers and postdoctoral fellow by providing financial support required for teaching activities. According to Durosaro *et al* (2008), study opportunities in microscopic anatomy and genetics has gained importance and advanced with the arrival of multimedia through virtual microscopy.

Forensic anthropology discipline highlights the significant role of physical anthropologists in the criminal justice system. This discipline has established as a complete professional course (Snow, 1982). Overall, 82% of the respondents were very much enthusiastic to choose forensic anatomy as a career in future. The results indicate that the students are eager and enthusiastic in exploring the opportunity on learning more about forensic anatomy and its scope. The application of forensic anatomy in forensic anthropology was well highlighted by Dirkmaat *et al* (2008), wherein it aids in the identification of human remains in forensic contexts. Mustapha *et al* (2012) suggested that the students should know the sub-disciplines of anatomy and marking out those which they are

confident before taking it as a career. The present generation has shown immense interest in forensic anatomy discipline as reflected in this study.

CONCLUSION

The findings of the study clearly indicated that, preclinical students are interested to know more about forensic anatomy. As this discipline generates interest and scope for research opportunities, the participant students are interested in selecting forensic anatomy for their future studies to develop it as their specialty. Placing forensic anatomy in the mainstream of curriculum broadens the scope. Forensic anatomy has a role in developing the applied aspects of medical anatomy, extending it into the forensic science.

ACKNOWLEDGMENTS

The research was supported by management and science university. We are very thankful specially to the preclinical year students of international Medical school under management and science university who participated in our research. Our sincere thanks to Dr Durgadass Govind Naik, Associate professor, International Medical School for his valuable comments which has improved our manuscript. We are also grateful to Dr Ashok Kumar Jeppu, Associate Professor and Dr Vijaya Markala from International Medical School as the reviewers of our manuscript.

REFERENCES

- Anshu. 2011. Inclusion of ethics matters in the undergraduate medical curriculum. *Indian Journal of Medical Ethics*, **8(3)**: 135-138.
- Ahmed, K., Rowland, S., Patel, V., Khan, R.S., Ashrafian, H., Davies, D.C. & Paraskeva, P.A. (2010). Is the structure of anatomy curriculum adequate for safe medical practice? *The Surgeon*, **8(6)**: 318-324.
- Brenton, H., Hernandez, J., Bello, F., Strutton, P., Purkayastha, S., Firth, T. & Darzi, A. 2007. Using multimedia and Web3D to enhance anatomy teaching. *Computers & Education*, **49(1)**: 32-53.
- Dirkmaat, D.C., Cabo, L.L., Ousley, S.D. & Symes, S.A. 2008. New perspectives in forensic anthropology. *American Journal of Physical Anthropology*, **137**: 33-52.
- Durosaro, O., Lachman, N. & Pawlina, W. 2008. Use of knowledge-sharing web based portal in gross and microscopic anatomy. *Annals Academy of Medicine Singapore*, **37**: 998-1001.
- Drake, R.L. 1998. Anatomy education in a changing medical curriculum. *The Anatomical Record*, **253(1)**: 28-31.
- Desai, K.D. 1976. The scope of modern anatomy. *Journal of Postgraduate Medicine*, **22(3)**: 103.
- Egwu, O.A., Akunna, G.G. & Egwu, J.A. 2014. Assessing students knowledge of sub-disciplines in anatomy: A pilot study. *International Journal of Medicine and Medical Sciences*, **6(10)**: 224-229.
- Evans, D.J & Watt, D.J. 2005. Provision of anatomical teaching in a new British medical school getting the right mix. *The Anatomical Record*, **284**: 22-27.
- Fauzia, N., Ghaith, A., Robert, S., Alfred, T. & Mohsin, Y. 2016. Integration of clinical anatomy labs in a clinical presentation-based curriculum: A tool to improve long-term retention of anatomy. *FASEB Journal*, **30(1)**: 232-239.
- Finnerty, E.P., Chauvin, S., Bonaminio, G., Andrews, M., Carroll, R.G. & Pangaro, L.N. 2010. Flexner revisited: the role and value of the basic sciences in medical education. *Academic Medicine*, **85(2)**: 349-355.
- Golda, S.D. 2010. A look at the history of forensic anthropology: tracing my academic genealogy. *Journal of Contemporary Anthropology*, **1(1)**: 34-47.
- Johnson, E.O., Charchanti, A.V. & Troupis, T.G. 2012. Modernization of an anatomy class: From conceptualization to implementation. A case for integrated multimodal-multidisciplinary teaching. *Anatomical Science Education*, **5**: 354-366.
- Mustapha, B., Akin-Tunde, A.O., Ousman, N., Bintou, J. & Akinyinka, O.O. 2012. Medical students' choices of specialty in the Gambia: the need for career counselling. *BMC Medical Education*, **12(1)**: 72-81.
- McCuskey, R.S., Carmichael, S.W. & Kirch, D.G. 2005. The importance of anatomy in health professions education and the shortage of qualified educators. *Academic Medicine*, **80(4)**: 349-351.
- Rafferty, A.T. 2007. Anatomy teaching in the UK. *Surgery*, **25**: 1-2.
- Sarkis, L.M., Treble, A., Wing, L.W. & Ramsey-Stewart, G. 2014. Retention of topographical anatomical knowledge following surgeon-facilitated whole-body dissection. *ANZ Journal of Surgery*, **84**: 820-822.

- Sugand, K., Abrahams, P. & Khurana, A. 2010. The anatomy of anatomy: a review for its modernization. *Anatomical Sciences Education*, **3**(2): 83-93.
- Snow, C.C. 1982. Forensic anthropology. *Annual Review of Anthropology*, **2**: 97-131.
- World Health Organization-SEARO. 2005. *Health ethics in South-East Asia: resource materials from WHO South East Asia Region*, **4**: 283.
- Zaid, H., Ward, D., Sammann, A., Tendick, F., Topp, K.S. & Maa, J. 2010. Integrating surgical skills education into the anatomy laboratory. *Journal of Surgical Research*, **158**(1): 36-42.

