GENDER DIFFERENCES IN REFLECTIVE PRACTICES OF MEDICAL STUDENTS FOR LEARNING ANATOMY

Khadija Qamar, Amna Tasawar, Muhammad Alamgir Khan

Army Medical College/National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: To assess the personal reflection ability of first year medical students who self-selected different strategies for learning gross anatomy.

Study Design: Cross-sectional analytical study.

Place and Duration of Study: Army Medical College Rawalpindi from Mar 2016 to Apr 2016.

Material and Methods: We described the purpose of the study (to assess students' ability for personal reflection) and called students of first year MBBS to participate in the study. Divided in two groups, Group A who self-selected the models for learning anatomy (response rate) and - of group B who self-selected the cadaveric specimens for learning anatomy. Those who agreed to participate signed an informed consent form and completed the questionnaires. The Groningen Reflection Ability Scale is a fully validated one-dimensional scale to measure personal reflection. It has 23 items rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Scores on the Groningen can range from 23 to 115, and persons with greater abilities for personal reflection have higher scores on the scale.

Results: Total 60 male students opted for the modalities of anatomy models for learning gross anatomy. Their accumulative reflective score was 4853. While 28 female students opted for the anatomy models for learning gross anatomy with the accumulative score of 2328. Out of 168 students 88 preferred the gross anatomy models for learning. Total 14 male students opted for the modalities of a dissection for learning gross anatomy. Their accumulative reflective score was 1193. While 16 female students opted for the dissection specimens for learning gross anatomy with the accumulative score of1387. Out of 168 students 20 preferred the dissection specimens for learning. Total 19 male students opted for the both modalities of anatomy models and dissection specimens for learning gross anatomy. Their accumulative reflective score was 1580. While 30 female students opted for both the anatomy models and dissection specimen for learning gross anatomy with the accumulative score of 2328.

Conclusion: Majority of the students with higher reflective score identified learning strategy preference for gross anatomy models.

Keywords: Medical students, Reflection, Reflective practice.

INTRODUCTION

The use of the cadavers to teach gross anatomy has been practised in undergraduate medical courses traditionally. Models were rated superior to using cadavers, especially in demonstrating superficial anatomy and markers[1]. The primary aims of model based anatomy are to reinforce student's gross anatomy learning and to assist in their appreciation of the three-dimensional structure of the body, and of natural variation; to introduce them to clinically significant features of the body surface; and to empower them to become expert and comfortable at handling with the cadavers without discomfort. It is important to note that living anatomy took place within a broader scheme of anatomy teaching and learning, which included clinical anatomy, medical imaging, structure and function and microstructure[2].

Reflection leads to improvement in learning and professional competence[3]. Reflection on action involves critical analysis of an experience and using the information gained as a guide in future situations[4]. Reflective writing is best done by mind mapping, a technique that helps in

expanding our thinking, structuring ideas and making connections.

Reflection is a metacognitive process that creates a greater understanding of both the self and the situation so that future actions can be informed by this understanding[5]. Self-regulated and life long learning have reflection as an essential aspect, and it is also required to develop both a therapeutic relationship and professional expertise[6].

There are a variety of educational approaches in undergraduate, postgraduate and continuing medical education that can be used to facilitate reflection, from text based reflective journals and critical incident reports to the creative use of digital media and story telling[7].

The choice of approach varies with the intended outcomes, but it should also be determined by the user since everyone has a preferred style[8]. Guided reflection, with supportive challenge from a mentor or facilitator, is important so that underlying assumptions can be challenged and new perspectives considered. Feedback also has an important role to enhance reflection[9].

Need-based reflective exercise supports need based reflection by stimulating reflection in response to complex problems (knowing-in-action) and surprise[10]. Self-monitoring and assessment in response to minute-by-minute changes (reflection-in-action) generates notion of experimentation. While evaluating one's own portfolio i.e. reflection-on-action integrates phenomenon in context of all relevant past experiences. This is essential for continuous professional development[11]. The very nature of reflective practice makes its quantification challenging. Several approaches have been described to assess reflective thinking and some instruments have been found to be reliable and valid at least theoretically. It has been claimed that demonstration of different levels of reflection is possible and reflection practices are amenable to improvement over time and with practice[12].

Reflective learning has become more widely used for a number of reasons, but one important factor is that this type of learning promotes "deep" learning, i.e. the kind of learning where the material is understood in a personal context and builds on previous knowledge. Reflection also promotes personal development and growth and can help a student to integrate knowledge, skills, attitudes, and values[13]. Students entering Army Medical College are permitted to choose between different learning strategies for gross anatomy course. One is model based and the other is a cadaver dissection technique to learn different regions of gross anatomy. This plan delivered the prospect to relate student features. We piloted this study to evaluate whether choice of learning strategies is associated with self-reflection among first-year medical students.

MATERIAL AND METHODS

We conducted a cross-sectional analytical study on first year medical students during the end of first module of academic session in March 2016 at Anatomy Department Army Medical College from March 2016 to April 2016. A total of 168 first-year students participated in the study, divided in two groups, group A who self-selected the models for learning anatomy and - of group B who self-selected the cadaveric specimens for learning anatomy. The data was collected through the Groningen Reflection Ability scale. This is a fully validated, one-dimensional scale to measure personal reflections. It has 23 items rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Scores on the Groningen can range from 23 to 115, and persons with greater abilities for personal reflection have higher scores on the scale. The study was conducted during the small group sessions of the class. Small group sessions were selected to facilitate the collaboration among the researcher and the students. During introductory sessions of the SGD, we explained the purpose of the study (to assess students' ability for personal reflection) and invited students to participate in the study.

Those who agreed to participate signed the   questionnaires. Data were analyzed by statistical

Table: Descriptive statistics for the Groningen scale.

Group Statistics						
	Sex	**n**	**Mean**	**Std. Deviation**	**Std. Error Mean**	**_p_-values**
I want to know why I do what I do	Male	91	4.16	.873	.091	.892
	Female	76	4.18	.962	.110	
I am aware of the emotions that influence my behaviour	Male	91	3.88	.841	.088	.061
	Female	76	4.12	.783	.090	
I don't like to have my clinical decision discussed	Male	92	2.40	1.120	.117	.280
	Female	76	259	1.145	.131	
I don't welcome remarks about my personal functioning	Male	92	2.58	1.112	.116	.405
	Female	76	2.72	1.173	.135	
I take a closer look at my own habits of thinking	Male	92	3.80	.929	.097	.361
	Female	76	3.93	.899	.103	
I am able to view my own behavior from a distance	Male	92	3.64	.793	.083	.873
	Female	76	3.62	1.019	.117	
I test my own judgements against those of others	Male	91	3.76	.821	.086	.540
	Female	76	3.67	.985	.113	
Sometimes others say that I do overestimate myself	Male	91	2.33	1.065	.112	.877
	Female	76	2.36	1.067	.122	
I find it impportant to know what certain rules and guidelines are based on	Male	91	3.93	.742	.078	.774
	Female	76	3.97	.993	.114	
I am able to understand people with a different cultural/religious background	Male	91	3.85	.906	.095	.660
	Female	76	3.91	.897	.103	
I am accountable for what I say	Male	91	4.05	.821	.086	.074
	Female	76	4.28	.759	.087	
I reject different ways of thinking	Male	91	2.04	.942	.099	.127
	Female	76	1.83	.855	.098	
I can see an experience from different standpoints	Male	91	3.70	.675	.071	.279
	Female	76	3.57	.914	.105	
I take responsibility for what I say	Male	91	4.27	.684	.072	.425
	Female	76	4.18	.778	.089	
I am open to discussion about my opinions	Male	91	3.84	.969	.102	.398
	Female	76	3.96	.930	.107	
I am aware of my own limitations	Male	91	4.04	.759	.080	.003
	Female	76	4.38	.653	.075	
I some times find my self having difficulty in illustrating an ethical standpoint	Male	91	3.38	1.052	.110	.015
	Female	76	3.00	.952	.109	
I am aware of the cultural influences on my opinions	Male	91	3.60	.801	.084	.419
	Female	76	3.71	.892	.102	
I want to understand myself	Male	91	4.20	.897	.094	.930
	Female	76	4.21	.957	.110	
I am aware of the possible emotional impact of information on others	Male	91	3.74	.841	.088	.153
	Female	76	3.92	.813	.093	
I sometimes find myself having difficulty in thinking of alternative solutions	Male	90	3.36	.975	.103	.498
	Female	76	3.25	1.021	.117	
I can empathize with someone else's situation	Male	90	3.87	.810	.085	.031
	Female	76	4.14	.828	.095	
I am aware of the emotions that influence my thinking	Male	90	3.99	.828	.087	.501
	Female	76	4.08	.891	.102	

informed   consent   form   and   completed   the   software SPSS version 21.

Mean and standard deviation were calculated for quantitative variables. Categorical variables were presented as frequencies and percentages. Independent sample t-test was applied for the mean comparison between males and females. A *p*-value <0.05 considered to be significant.

RESULTS

A Total of 168 students participated in the research, which included 92 (54.8%) males and 76 (45.2%) females. The mean age of the participants was 18.73 ± 1.788 years with an academic result of 36.50 ± 9.73 and 41.00 ± 9.58 in theory and practical respectively. A total of 166 students (98.8%) were Pakistan nationals while 2 students (1.2%) were Non-Pakistanis. The Cronbach alpha value for the Groningen scale was 0.540. The descriptive statistics for the Groningen scale is given in table. Total 60 male students opted for the modalities of anatomy models for learning gross anatomy. Their accumulative reflective score was 4853, while 28 female students opted for the anatomy models for learning gross anatomy with the accumulative score of 2328. Out of 168 students 88 preferred the gross anatomy models for learning. Total 14 male students opted for the modalities of a dissection for learning gross anatomy. Their accumulative reflective score was 1193, while 16 female students opted for the dissection specimens for learning gross anatomy with the accumulative score of 1387. Out of 168 students 20 preferred the dissection specimens for learning. Total 19 male students opted for both modalities of anatomy models and dissection specimens for learning gross anatomy. Their accumulative reflective score was 1580. While 30 female students opted for both the anatomy models a dissection specimen for learning gross anatomy with the accumulative score of 2328.

DISCUSSION

This study focused on the preferences of medical students in practising different strategies and self-reflection to develop those abilities further during their advanced medical education.

This information was obtained by asking students to reply to questions connected to each of the elements of learning satisfaction. A perception of course learnability is required to motivate students to persist with their learning[14]. Student perceptions and awareness of a gross anatomy course are affected by their learning style preferences. Reflection improves self-understanding beyond self-report, clinical behaviour and patient care. It offers an opportunity to evaluate one's strengths and weaknesses, to ascertain learning needs and to validate own judgements and knowledge continuously[15]. However, the goal of reflection should be to develop not only one's knowledge and skills, but also habits of mind that promote informed flexibility, on-going learning and humility. Reflection involves metacognition i.e. thinking about thinking and feeling about feeling[16]. The evidence suggests that reflection is most useful when considered a learning strategy. Most models depict reflective practices as activated by non-routine situations as "knowing in action" to solve complex problems. Committed reflection is a discussion of what has been learned, how it has affected the individual and how they feel that they have changed. Emotional exploration is evidence of the emotional impact of an experience and this includes insights and discussion about their own beliefs and values, including how these have been challenged[17]. Objective reporting is only a descriptive account of what happened during the experience with no evidence of reflection, or how the experience has affected them. Diffuse reporting is unfocused or disorganised and contains only a description of the experience[18]. Self-monitoring in response to reflection in action generates notion of experimentation as well. Evaluating one's own reflection is essential for continuous professional development.

Students alleged the use of models depicting anatomical structure as useful and needed for learning anatomy, mounting palpation skills, and enhancing the concept of relationships of structures. Literature evaluating the efficacy of

plastic models as teaching/learning resources is limited; however, several studies report positive feedback regarding the use of cadaveric as a resource for teaching anatomy[19]. Of the 168 participants who completed the questionnaire, the majority of participants indicated that they preferred models to the traditional dissection. The most common rationale for this preference was the presentation of the real anatomical structures. If a student does not have the opportunity to choose the learning strategies track that best suits his or her personal characteristics, the student may not perform as well as he or she might in the other learning strategies. Committed reflection is a discussion of what has been learned, how it has affected the individual and how they feel that they have changed.

Some presentation of evidence to back this up should be provided. In other words, the success of a student in a model based learning may rely on certain personal elements, among them greater self-reflection. In addition, analysis of students' performance may be influenced because; one may determine that model based learning produces students who are more self-reflective and depicted higher scores of reflection.

CONCLUSION

Majority of the students with higher reflective score identified learning strategy preference for gross anatomy models

ACKNOWLEDGMENT

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

REFERENCES

1. Mann K, Gordon J, Macleod A. Reflection and reflective practice in health professions education: a systematic review. Adv in Health Sci Educ 2009; 14: 595-21.
2. Ronald M Epstein. Reflection, perception and the acquisition of wisdom (Commentary). Medical Education. 2008; 42: 1048–50.
3. Drinan J. The limits of problem-based learning. In: Boud D, Feletti GI, editors. The challenge of problem-based learning. 2nd ed. London: Kogan Page 1999; 333-39.
4. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. Adv in Health Sci Educ 2009; 14: 595–621.
5. Moskal, BM. Practical Assessment, Research & Evaluation. 2000 [internet]. cited 0n March 2016. 7(3): 1-5. Available from: http://pareonline.net/getvn.asp?v=7&n=3.
6. Cooper MH, Kveton JF, Watson BJ. Preservation of the dissected and surgical anatomic detail in the human temporal bone. Am J Otol 1987; 8(1): 18–22.
7. Graf J. The application of the plastination method in experimental orthopaedic surgery. J Int Soc Plastination 1991; 5: 20–22.
8. Tiedemann K. A silicons-impregnated knee joint as a natural model for arthroscopy. J Int Soc Plastination. 1988; 12(1): 13–17.
9. Cook P. Sheet plastination as a clinically based teaching aid at the University of Auckland. Acta Anatomica 1997; 158: 33–36.
10. Hubbard CJ, Miller JS, Olson D. A new way to teach an old topic: the cadaver-based anatomy short course for high school students. Anat Rec B New Anat 2005; 284(1): 6–11.
11. Henry RW. Silicone plastination of biological tissue: room temperature technique north caroline technique and products. J Int Soc Plastination 2007; 22: 26–30.
12. Purinton P. Plastinated brains used with computer assisted learning modules for teaching veterinary neuroanatomy laboratories. J Int Soc Plastination 1991; 5(1): 16–19.
13. Valdecasas A. Understanding complex systems: lessons from Auzoux's and von Hagens's anatomical models. J Biosci 2009; 34(6): 835–843.
14. Atkins S, Murphy K. Reflective practice nursing standard 1994; 8 (39) pp49-54.
15. Boyd E, Fales A. Reflective learning: the key to learning from experience. J Humanist Psychol 1983; 23 (2) pp99-117.
16. Gibbs G (1988) Learning by doing: A guide to teaching and learning methods. Oxford Further Education Unit, Oxford.
17. Fitzgerald M (1994): Theories of reflection for learning in reflective practice in nursing, A Palmer and S Burns (eds). Blackwell Scientific, Oxford.
18. Kim HS Critical Reflective inquiry for knowledge development of nursing practice. JAN 1999; 29 (5); 1205-12.
19. Smyth J. Developing and sustaining critical reflection in teacher education. JTE 1989; 40(2); 2-9.

....