

STUDENTS' PERCEPTION ON EFFECTIVENESS OF PATHOLOGY TEACHING IN PHASE 1 MEDICAL PROGRAM AT UCSI UNIVERSITY

Naw May Emerald^{1*}, Thu Zar Han², San San Oo³

1. Associate Professor, MD Programme, 2. Associate Professor/Deputy Dean,

Faculty of Medicine & Health Sciences, UCSI University, Kuala Lumpur, Malaysia.

3. Associate Professor, Faculty of Medicine, University Sultan Zainal Abidin (UniSZA), Kuala Terengganu, Malaysia.

*Email id of corresponding author-- nawme@ucsiuniversity.edu.my

Received: 14/12/2015

Revised: 06/08/2016

Accepted: 18/08/2016

ABSTRACT

Objective: A sound knowledge of pathology is essential to clinical practice. This study explored the students' perception on effectiveness of pathology teaching in Phase 1 medical program at UCSI University. **Materials and methods:** A cross sectional descriptive study was performed in 83 medical students from clinical phase by using pretested questionnaire which comprised 46 statements assessing the students' perception on subject, teaching-learning methods, availability of facilities and resources, and effectiveness of pathology teaching. **Results:** Out of 83, 55.4% perceived that pathology is interesting and 81.9% responded as a challenging subject. More than half of the students were satisfied with general and systemic pathology teaching and agreed that they were made easy to understand the learning topics by lectures combined with museum and directed-self learning, and also by integrated with other basic science subjects. Students perceived that lectures are more effective than self-learning and knowledge obtained from lectures was more than that of problem-based learning. Over 60% agreed that phase 1 pathology teaching is helpful for better understanding of clinical teaching and they were given adequate foundation for clinical years. **Conclusion:** Although students were satisfied with the methods of teaching of pathology in Phase 1, teaching plan should be reviewed to create students' centered, more active learning classroom persuading students to perceive more interest on the subject. Because of half of the students who did not agree and who gave neutral responses to the statement on adequacy of pathology knowledge, the contents in curriculum should be reviewed for further improvement.

Keywords: Effectiveness, Pathology, Phase 1, Students' Perception

INTRODUCTION:

Pathology is the medical specialty that provides a scientific foundation for medical practice. It is a required basic science course in medical school, and is often the first introduction to human disease processes. (1) Nowadays, most of the medical schools have revised the medical curriculum to reduce the volume of facts medical

students were required to learn and the amount of didactic lectures in favour of self-directed learning. The undergraduate medical curriculum has thus evolved from being teacher-centred to student centred, from discipline-based to integrated core and options-based and from passive acquisition of knowledge imparted by

real teachers to active problem-based learning. Pathology learning has changed from seeing pots (potted specimens) in pathology museums and real organs at autopsy to looking at images on CDs and websites: from daily contact with pathologists, to irregular interaction with anonymous computer screens. (2)

With the gradual increase of integrated medical curricula, it is important for pathology teachers to engage in the change process and help to shape the new-style courses. One of the positive aspects of change is that it can provide an opportunity to rethink current practice, leading to further developments in this area. (3) Haspel et al. found that students, after the preclinical years, have motivation to learn about pathology and its links to clinical medicine but have limited knowledge regarding pathology as a career. (4)

In MD programme of UCSI University, the mode of teaching learning in Phase 1 (pre-clinical phase) is integrated, system based and problem-based learning approach. There are different methods of teaching for pathology subject. The methods include didactic lectures, museum sessions, PBL (Problem-based learning), DSL (Directed self learning) and SDL (Self-directed learning) packages. Museum sessions are being conducted with power point slide show of images obtained from available websites, histopathology slides demonstration by using virtual microscopy as well as hands-on light microscopic study, displayed laminated sheets of pathologic images (picture plates) and traditional way of using potted morbid specimens demonstration.

Course evaluation made by the students provides the useful feedback information on the quality of teaching-learning. Bhowmick et al. found in their study that the feedback from the first year M.B.,B.S students from India facilitates a change in preconceived notion about teaching-learning principles on the faculty. (5) It is required to know the students' perception of whether they have acquired adequate knowledge from

pathology teaching in Phase 1 that will be helpful to their clinical teaching. Based on the information, pathology teaching can further be improved by reviewing contents and teaching strategies. Therefore this study was aimed to explore the students' perception on effectiveness of pathology teaching in Phase 1 medical program at UCSI University.

MATERIALS AND METHODS:

A cross sectional descriptive study was conducted on 83 Phase 2 medical students who had already completed Phase 1 medical program during the period of October 2013 to September 2015. A questionnaire comprising 46 statements which include 7 statements to assess the students' perception on pathology subject, 22 statements to assess the teaching-learning methods, 8 statements to assess the facilities and resources, and 11 statements to assess the effectiveness of teaching in Phase 1 medical programme. Some statements were adopted (5) and some were pretested self-administered. The students were asked to respond all statements based on their own perception and the responses were given by 5-points Likert scale from 5 (strongly agreed) to 1 (strongly disagreed). The data were recorded and analyzed by using SPSS 18.0 software.

Before conducting the test, the ethical issue was cleared and a brief information sheet of research was distributed to the students participated in the study. The consent was taken and students' anonymity was preserved.

RESULTS:

Characteristics of respondents

A total of 83 medical students, 33 (39.8%) students from year 3 (2011/16 batch), 30 (36.1%) students from year 4 (2010/15 batch) and 20 (24.1%) students from year 5 (2009/14 batch) participated in the study. Among them 20 (24.1%) were males and 63 (75.9%) were female students. With regards to the race, there were 41 (49.4%) Chinese, 24 (28.9%) Indian, 15(18.1%)

Malay and 3 (3.6%) were international students. (Table 1)

Perceptions towards pathology subject

Out of 83 students, 46 (55.4%) students revealed that pathology is interesting and 68 (81.9%) students perceived that pathology as a challenging subject. Most students (73.5%) agreed that study of histopathology is more difficult than pathogenesis (39.8%) and gross morphology (47%). However 78.3% responded that pathology is easy to study with didactic lecture combined with morbid specimen and microscopic slide demonstration. Moreover, 62 (74.7%) students agreed that they had better understanding by integration with other basic medical science subjects. (Figure 1)

Perceptions towards mode of teaching learning methods

Most of the students responded positively to the statements assessing the mode of teaching learning methods. However, regarding the statements related to didactic lecture, 20 (24.1%) agreed and 31 (37.3%) students responded neutrally to the statement 'lecture is monotonous one-way mode of communication'. Regarding museum and DSL (directed self-learning), 72 (86.8%) students agreed that the museum sessions were helpful for their learning and 51 (61.4%) students responded DSL topics are helpful for clinical correlation. However, 33 (39.7%) students disagreed and 29 (34.9%) students gave neutral response to the statement 'self-learning was more effective than lectures'. For the statement 'knowledge is obtained from PBL than lectures', only 11 (13.2%) agreed whereas 51 (61.5%) disagreed and 21 (25.3%) responded neutrally. (Table 2)

Perceptions towards facilities & resources

Sixty eight (81.9%) agreed that laminated sheets displayed in the museum were helpful for their study. Most students (66.3%) responded that home is the best place for self study rather than medical lab, museum and library. Regarding

learning resources, more than 80% of students perceived that prescribed text books and lecture notes were the main resources for their learning than online information. (Figure 2)

Perceptions towards the satisfaction of general and system pathology teaching in Phase 1

Regarding the effectiveness of teaching pathology in Phase 1, most students were satisfied with general pathology and systemic pathology teaching. (Table 3)

Perceptions towards the overview of effectiveness on Phase 1 Pathology teaching

Less than 50% of students agreed with the statement 'knowledge obtained from Phase 1 pathology teaching was adequate for clinical year' but 28 (33.7%) were neutral and 17(20.5%) responded disagreed. However, more than half of the students agreed that pathology teaching in Phase 1 was helpful for better understanding of clinical teaching (77%), and perceived that knowledge of pathogenesis (88%) and morphology (61.4%) was helpful for clinical correlation. For overall assessment on Phase 1 pathology teaching, 52 (62.6%) students responded that they were given adequate foundation for clinical years. (Table 4)

DISCUSSIONS:

Pathology is a required basic science subject that provides a scientific foundation for medical education and introduces human disease process. Our findings indicated that 55.4% students perceived pathology is an interesting subject and 81.9% students responded pathology as a challenging subject. Compared to a study conducted in 2014 at medical college of Gujarat, India, the percentage of UCSI students interested in pathology was lower (55.4%) than that of the students from the medical college of Gujarat (64.8%). (6) This finding indicates that pathology lecturers should find out why our medical students have less interest in the subject compared to other medical college. Number of lectures, volume of facts, self-directed learning

may be the contributing factors. **(2)** Teaching methodology should be reviewed to create more active and interesting classroom. More studies that explore the students' perception are needed to be done to obtain the information about the interest of medical students on pathology subject.

Teaching-learning methods such as didactic lectures, museum sessions, directed self-learning, (DSL), problem-based learning (PBL) and self-directed learning (SDL) are currently conducted in Phase 1 MD program of UCSI University. More than 70% of students agreed that pathology is easy to study with didactic lectures combined with morbid specimens and microscopic slides demonstration. 65.1% perceived that museum sessions are helpful for their learning. In museum sessions of our University, virtual microscopy, hands-on light microscopy, power-point slides show of images from the available web-sites and traditional ways of using potted morbid specimens demonstration were conducted. Julio et al. stated that integrated curriculum utilizing informative systems provides an excellent opportunity to associate pathology with clinical medicine early in training of medical students. **(7)** Thus, upgrading the facilities towards informative system based on technology could improve pathology teaching.

The statement 'better understanding was obtained by integrating with other basic science subjects' was agreed by 74.7% of the students. This finding is consistent with the finding from a study of Shah et al. where integrated teaching is the most effective method of understanding the topic thoroughly. **(6)**

Most of the students responded positively to the statements with regard to teaching methods. UCSI students preferred didactic lectures and museum sessions as their effective teaching learning methods than SDL and PBL, and perceived DSL is helpful for their clinical correlation. More than 80% students agreed with the statements lecture objectives are clearly outlined (83.2%), lectures are aligned with objectives (86.8 %) and they understand the

concepts outlined from lecture. Most students (84.3%) perceived that they are encouraged for interactive learning. These findings are consistent with the studies from UiTM Malaysia stated that majority of their students received clear objectives for pathology, microbiology, and parasitology subjects in year 1 and year 2 and teaching of these subjects enhanced their motivation to learn, and found all methods of general pathology teaching (lectures, practical and DSL) are useful. **(8, 9)**

Lectures conducted in pathology teaching are usually 'one way' teaching with limited student participation. Lecturers convey new information, show images relevant to the topics and students are listeners but they have chances to ask questions for clarification of doubts. Bhowmick et al. also stated that monotonous 'one-way' mode of communication was least appreciated aspects of lecture presentation found in their study of perception of first professional MBBS students in India about a teaching-learning activity in Biochemistry. **(5)** Shah et al. also indicated that tutorials and practical are more effective teaching method compared to didactic lectures. **(6)** Although more than 59% of students were satisfied with general and systemic pathology teaching, tutorial should be considered as an additional teaching method for UCSI students.

Regarding the statements for effectiveness of Phase 1 teaching, the findings indicate that pathology teaching in Phase 1 is helpful for better understanding of clinical teaching (77.1%), knowledge of pathogenesis (88%) and morphology (61.4%) are helpful for clinical correlation, and 62.6% agreed that they obtained adequate foundation for clinical years. However, some students (20.5%) did not agree and some (33.7%) responded neutrally to the adequacy of pathology knowledge in phase 1. There are no previous studies to compare with our findings but Marsdin and Biswas reported that junior doctors know less about the pathologic basis of disease and although they thought that pathology formed a major component of their postgraduate

examination, their undergraduate teaching left them unprepared for their post graduate careers, and they had to learn basic principle for postgraduate exam. (10) Thus, contents of pathology subject in curriculum of Phase 1 MD program should also be reviewed for further improvement.

CONCLUSION:

The findings indicate that the importance of the pathology subject should be highlighted to the students in order to get more interested in pathology which is essential for clinical practice and foundation of clinical medicine. Therefore, the teaching plan should be reviewed to create more interested and active learning classroom. Although medical education has switched from teaching to learning, student-centred rather than teacher-centred, most of the students from UCSI University preferred didactic lectures and museum sessions as their effective teaching learning methods than SDL and PBL. Most students were satisfied with methods of teaching learning and agreed that Phase 1 pathology teaching is helpful for better understanding of clinical teaching. Less than 50% agreed that knowledge obtained from Phase 1 pathology teaching is adequate for clinical year. Thus, the contents in curriculum of pathology subject should be reviewed for further improvement.

ACKNOWLEDGEMENT:

This study was carried out under the research grant funded by Centre of Excellence for Research Value Innovation and Entrepreneurship (CERVIE) of UCSI University. The Authors would like to gratefully acknowledge to UCSI medical students (batch 2009/14, 2010/15, 2011/16) who actively participated in the study and Associate Professor Dr. Thanda Aung for participating in data collection.

REFERENCES:

1. The Intersociety Council for Pathology Information (ICPI) .Pathology; A Career in Medicine. 2014 (cited 2015 Oct 12). Available from www.asip.org/career/pathologistteacher.htm,
2. Domizio P. The Changing Role of Pathology in the Undergraduate Curriculum .Chapter 12. In: Peter A H & Nicolas A W, editors. Understanding disease. A Centenary Celebration Pathologic Society. 2006 (cited 2013 Feb 15); Page 137-152. Available from www.pathsoc.org/files/history/c12.pdf
3. Marshall R, Cartwright N, Mattick K. Teaching and learning pathology: a critical review of the English literature. Medical Education 2004; 38: 302–313.
4. Haspel RL, Bhargava P, Gilmore H, Kane S, Powers A, Sepehr A, et al. Successful Implementation of a Longitudinal, Integrated Pathology Curriculum During the Third Year of Medical School. Arch Pathol Lab Med 2012; Vol 136: 1430-1436.
5. Bhowmick K, Mukhopadhyay M, Chakraborty S, Sen PK., Chakraborty I. Assessment of perception of first professional MBBS students in India about a teaching learning activity in Biochemistry. South East Asia Journal of Medical Education 2009; Volume 3, No.2, 27-34.
6. Shah AR., Shethwala ND, Parmar BH. Perception of undergraduate medical students towards the subject of Pathology at one of the Medical Colleges of Gujarat, India. International Journal of Medical Science and Public Health 2014; 3(7): 863-865.
7. Daiz-Perez JA, Raju S, Julio ADP, Sharat R, Echeverri JH. Evaluation of a teaching strategy based on integration of clinical subjects, virtual autopsy, pathology museum, and digital microscopy for medical students. J Pathol Inform 2014; 5:25

8. Osman MT, Adnan A, Kutty MK, Al-Naggar RA. Evaluation of Laboratory Medicine Teaching and Learning by Medical Students in Hybrid Integrated Curriculum. Data from Public Malaysian University. Journal of Basic and Applied Scientific Research 2014; 4 (6):151-157
9. Osman MT, Kutty MK, Adnan A, Al-Naggar RA, Bakar N S, et al. Perception of Year 1 Malaysian Medical Students Towards Teaching and Learning of General Pathology in Hybrid Integrated Curriculum. World Applied Science Journal 2013; 23 (7):977-982.
10. Marsdin E & Biswas S. Are We Learning Enough Pathology in Medical School to Prepare Us for Postgraduate Training and Examination. Journal of Biomedical Education 2013, Volume 2013 (Article ID 165691) (cited 2015 July 20); 3 pages. Available from: <http://dx.doi.org/10.1155/2013/165691>

ABBREVIATIONS:

PBL	Problem-based learning
DSL	Directed self-learning
SDL	Self-directed learning

Table 1: Characteristics of respondents (n=83) participated in the study

Characteristics		Number (%)
Academic yr	Year 3 (2011/16 batch)	33(39.8)
	Year 4 (2010/15 batch)	30(36.1)
	Year 5 (2009/14 batch)	20(24.1)
Gender	Male	20(24.1)
	Female	63(75.9)
Ethnics	Malay	15(18.1)
	Chinese	41(49.4)
	Indian	24(28.9)
	others	3(3.6)

Table 2: Perceptions towards mode of teaching learning methods

No.	Questionnaire statements	SD/D Number (%)	Neutral Number (%)	A/SA Number (%)
1.	The lecture objectives are clearly outlined at the beginning of each lecture class	2(2.4)	12(14.5)	69(83.2)
2	Lectures are aligned with the learning objectives	2(2.4)	9(10.8)	72(86.8)
3	Generally understand the concepts outlined from lecture	0(0.0)	14(16.9)	69 (83.2)
4	Teachers give enough opportunity to clarify the students' doubts	0(0.0)	6(7.2)	77(92.8)
5	The topics of lecture are arranged in logical sequence and well suited to your understanding	4(4.8)	16(19.3)	63(75.9)
6	The language of presentation is simple	4(4.8)	14(16.9)	65(78.3)
7	The continuity between individual lectures is maintained adequately	6(7.2)	24(28.9)	53(63.8)
8	Teachers encourage interactive learning in the form of asking or raising questions themselves or allowing you to ask questions	0(0.0)	13(15.7)	70(84.3)
9	The most important points are summarized at the end of lecture	6(7.2)	13(15.7)	64(77.1)
10.	Lecture is monotonous 'one-way' mode of communication.	32(38.5)	31(37.3)	20(24.1)
11.	Judicious use of teaching-learning media	10(12.0)	41(49.4)	32(38.5)
12.	Poor audibility of a lecture presentation	51(61.4)	22(26.5)	10(12)
13.	Poor visibility of T-L media	45(54.2)	26(31.3)	12(14.4)
14.	Anatomy and physiology is essential for understanding pathology. There is enough time to study these subjects before pathology lectures start.	14 (16.8)	17(20.5)	52(62.6)
15.	Pathology lectures can be integrated with other subjects	3(3.6)	20(24.1)	60(72.2)
16.	Lecture hour is enough for each scheduled lecture topic.	16(19.3)	22(26.5)	45(54.2)
17	The more the lecture hours the better the understanding	29(34.9)	25(30.1)	29(34.9)

18	Medical museum session is helpful for students' learning	2(2.4)	9(10.8)	72(86.8)
19.	Student self learning is more effective than lecture	33(39.7)	29(34.9)	21(25.3)
20.	Knowledge of pathology is obtained from PBL than lectures	51(61.5)	21(25.3)	11(13.2)
21	DSL topics are not compulsory to answer but give benefits for self learning.	16(19.3)	22(26.5)	45(54.3)
22.	DSL topics are helpful for clinical correlation	9(10.8)	23(27.7)	51(61.4)

***SD = Strongly disagree, D=Disagree, A= Agree, SA= Strongly agree**

Table 3: Perceptions towards the satisfaction of General and Systemic Pathology teaching in Phase 1

No.	Questionnaire statements	SD/D Number (%)	Neutral Number (%)	A/SA Number (%)
1.	Teaching general pathology in year 1 is satisfied and has benefit of understanding all basic principles of mechanism of disease processes.	10(12)	24(28.9)	49(59)
2.	Teaching hematology in year 1 is satisfied and gives benefit of understanding the pathology of common hematological diseases.	9(10.8)	22(26.5)	52(62.6)
3.	Teaching immunology in year 1 is satisfied and gives benefit of understanding all basic principles of mechanism of disease processes.	10(12)	21(25.3)	52(62.6)
4.	Teaching the following systems are satisfied and give benefits of understanding the mechanisms of specific disease processes.			
	a) Cardiovascular system	2(2.4)	25(30.1)	56(67.5)
	b) Respiratory system	2(2.4)	20(24.1)	61(73.5)

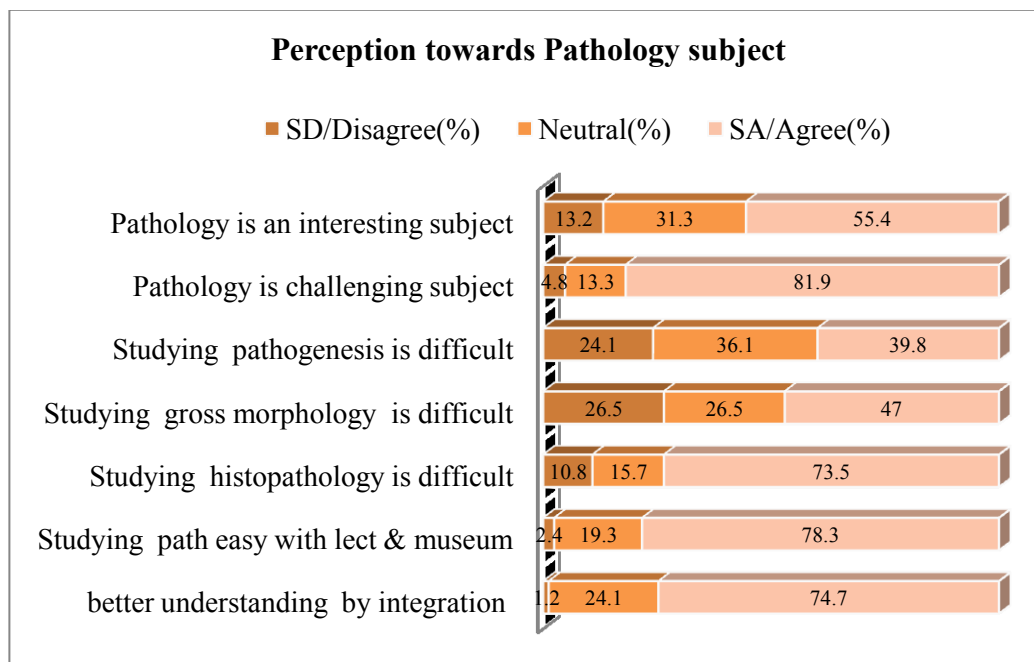
	c) Urinary system	2(2.4)	22(26.5)	59(71.1)
	d) Reproductive system	2(2.4)	21(25.3)	60(72.3)
	e) Endocrine system	3(3.6)	20(24.1)	57(68.7)
	f) Gastrointestinal system	3(3.6)	20(24.1)	60(72.3)
	g) Neuroscience	4(4.8)	25(30.1)	54(65.1)
	h) Musculoskeletal system	4(4.8)	27(32.5)	52(62.7)
	i) Genetics	7(8.4)	22(26.5)	53(63.9)

*SD = Strongly disagree, D=Disagree, A= Agree, SA= Strongly agree

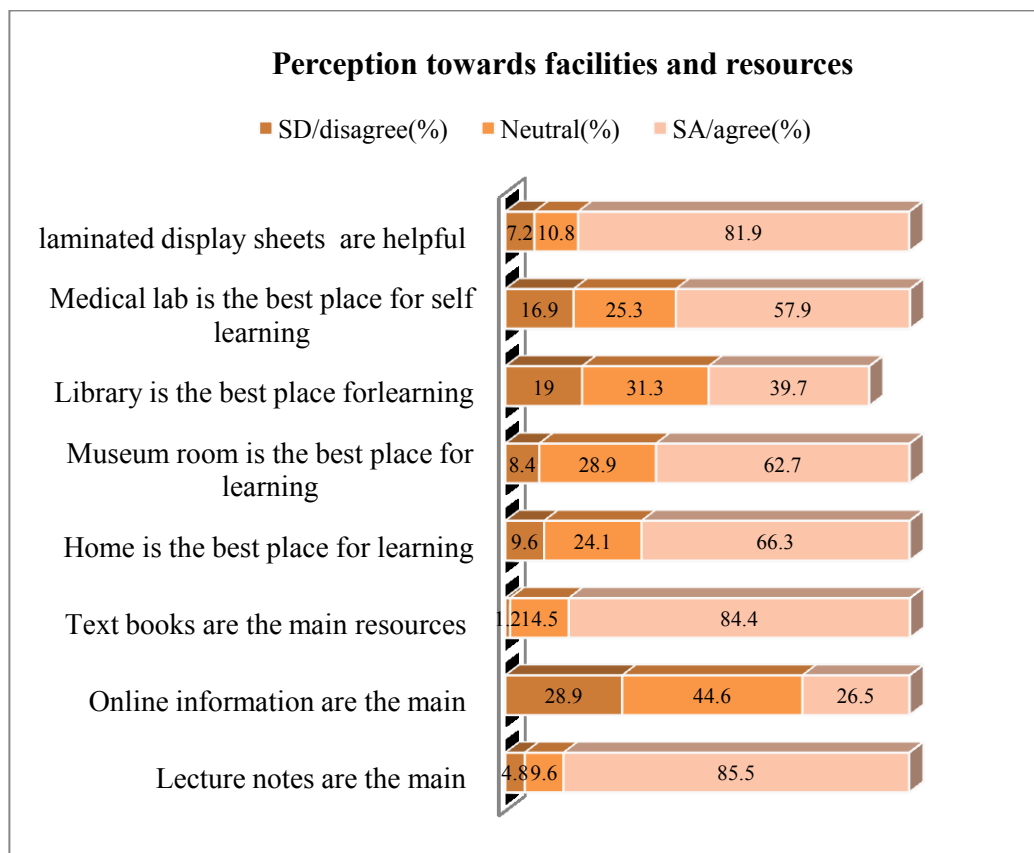
Table 4: Perceptions towards the overview of effectiveness on Phase 1 Pathology teaching

No.	Questionnaire statements	SD/D Number (%)	Neutral Number (%)	A/SA Number (%)
1.	Knowledge obtained from Phase 1 pathology teaching is adequate for clinical year	17(20.5)	28(33.7)	38(45.8)
2.	Pathology teaching in Phase 1 is helpful for better understanding of clinical teaching	1(1.2)	18(21.7)	64(77.1)
3.	Knowledge of pathogenesis of diseases helpful for clinical correlation	1(1.2)	9(10.8)	73(88)
4.	Teaching morphology of diseased organ is helpful for clinical correlation	10(12)	22(26.5)	51(61.4)
5.	Pathology teaching in Phase 1 gives an adequate foundation for clinical years	7(8.4)	24(28.9)	52(62.6)

*SD = Strongly disagree, D=Disagree, A= Agree, SA= Strongly agree

Figure 1: Perceptions towards Pathology subject

*SD= Strongly disagree, SA= Strongly agree

Figure 2: Perceptions towards facilities & resources

*SD= Strongly disagree, SA= Strongly agree