

Appraisal of medical students insight on audio visual aids used for teaching and learning of didactic lectures of pharmacology: a study from a medical school of Mauritius



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Abstract

Background

Didactic lectures are traditional way of teaching and learning and it is commonly used in teaching Pharmacology. The objective of this study is to find out medical students appraisal regarding the audio visual aids used in didactic lectures of Pharmacology at SSR Medical College Mauritius. This is the first study done on students appraisal on teaching aids used in teaching and learning of Pharmacology from Mauritius.

Methods

This is a cross sectional questionnaire based observational study carried out at Sir Seewoosagur Ramgoolam Medical College, Mauritius between 1st April 2016 to 1st May 2016. Chi square test were used for analytical purpose questionnaire validation tests indicated that the Alpha Cronbach was 0.70. P-value < 0.05 was considered to be statistically significant.

Results

Out of 194 students 175 completed the questionnaire completely and the response rate of the study was 90.20%. A combination of teaching aids were chosen as the best teaching aids in pharmacology by most of the students 69.7%, followed by dictating notes 10.9%, blackboard and power point presentation 9.1%.

Conclusion

A combination of different audiovisual aids, eg. Blackboard/whiteboard along with power point presentation is the best teaching aid. This aid is best for perception of diagrams and flow chart in Pharmacology, understanding the concepts of pharmacology, classification of drugs, mechanism of action of drugs, indications, adverse effects, contraindications, drug interactions and dose of drugs. This aid facilitates two-way interaction between teacher and the student.

Key words

Audio visual aids, Mauritius, Pharmacology, Student appraisal, Teaching and Learning



Background

Didactic lectures are traditional way of teaching and learning and it is commonly used as a method in Pharmacology [1]. Power point presentation is most common teaching aids used by teachers for didactic lectures [2]. Medical faculty are used to take lectures using different audio visual aids by highlighting important points on a board, by using overhead projection or by a computer based system like power point presentation to make the student understand the topic[3]. Seewoosagur Ramgoolam Medical College (SSRMC) is the first medical college of Mauritius established in 1999. SSR medical college has admitted medical students from different countries across the globe viz. United Kingdom, United States of America, Canada, Australia, New Zealand, Tanzania, Kenya, Mozambique, South Africa, UAE, India, Nepal, Sri Lanka and Bangladesh [4,5]. The medical school is affiliated to the University of Mauritius (UOM) and is accredited by the tertiary education commission of Mauritius. The medical course is of 5 years duration and 1 year of internship. Pharmacology is taught for duration of one and half year over three semesters in the second phase of MBBS course. The objective of this study is to find out medical students appraisal regarding the audio visual aids used in didactic lectures of Pharmacology at SSR Medical College Mauritius. This is the first study done on students appraisal on teaching aids used in teaching and learning of Pharmacology from Mauritius.

Material and Methods

Study Period

This research was conducted between 1st April 2016 to 1st May 2016.

Study design, participants

This is a cross sectional questionnaire based observational study carried out at Sir Seewoosagur Ramgoolam Medical College, Mauritius. All the medical students those were studying Pharmacology were asked to fill the questionnaire confidently and confidentially.

Response Rate

Out of 194 students 175 completed the questionnaire completely and the response rate of the study was 90.20%.

Questionnaire design

A standard questionnaire was constructed by the faculty members of the Department of Pharmacology. A pilot study was done among 10 students and then the questionnaire was modified after discussing with the investigators of the research paper.

Validity of the Questionnaire

Questionnaire validation tests showed that the Alpha Cronbach was 0.70.

Data collection

The data collected includes demographic details such as gender (male and female), Nationality (Indian, Mauritian and South African).

Inclusion criteria

A total of 175 preclinical medical students from 4th, 5th and 6th semester those were studying Pharmacology participated in the study.

Exclusion criteria

19 questionnaires were rejected based on incomplete filling of the questionnaire and absence of the students from the class.

Sample size calculation

Preceding to the study a preliminary study was done in 10 medical students randomly selected showed the best teaching method is combination of teaching aids with 70%. $P=70\%$, $Q=30\%$, Allowable Error= 10% of $P = 7$. Required sample size for 95% CI is 165. $P =$ percentage of students opted combination of teaching aids as a best methodology in teaching Pharmacology. We got adequate sample size of 175 [6, 7].

Outcome variable

The main outcome variable the best teaching and learning aids used in Pharmacology viz. Dictating notes, power point presentation, black board teaching and combination of aids used, Best teaching aids for perception of diagrams and flow chart in Pharmacology, understanding the concepts of pharmacology, stimulates further reading in pharmacology, understand / remember the classification of drugs, understanding of mechanism of action of drugs, understand indications, adverse effects, contraindications, drug interactions and dose of drugs, better way of visualization, time saving method of teaching and learning pharmacology, student friendly aids, 2 way communication, recapitulate during exam, best method of taking down notes.

Explanatory variables

Factors which were taken into consideration were gender (male and female), Nationality of students (Indian, Mauritian, South African). Other factors were preference of taking notes during lectures or to take handouts after the lectures.



Ethical committee approval

The Research was conducted in accordance to the 64th World Medical Association General Assembly, Brazil, 2013 of the Declaration of Helsinki. Preceding this research, the permission was taken from the concerned authority of SSR Medical College, Mauritius.

Data management and statistical analysis

The data was managed and was analyzed by using Excel 2016, Statistical Package for the Social Sciences (SPSS) for Windows Version 22.0 and EPI Info 7.2.1 Windows Version. Chi square test was used to observe the difference between different variables. $p < 0.05$ was considered as statistically significant. We calculated 95% confidence intervals (95% CI).

Null hypothesis

Power point presentation is the best teaching aids used for teaching and learning of Pharmacology among undergraduate medical students.

Alternative hypothesis

Power point presentation is not the best teaching aids used for teaching and learning of Pharmacology among undergraduate medical students.

Results

Table – 1 Socio demographic details and the best teaching AIDS preferred by medical students			
		(n= 175)	95% CI
Gender	Male	92(46.9)	45.2, 60.0
	Female	93(53.1)	45.7, 60.5
Nationality	Indian	120(68.6)	61.7, 75.4
	Mauritian	26(14.9)	9.6, 20.1
	South African	29(16.6)	11.1, 22.1
Semester	4th Semester	73(41.7)	34.4, 49.0
	5th Semester	29(16.6)	11.1, 22.1
	6th Semester	73(41.7)	34.4, 49.0
Best Teaching AIDS	Dictating Notes	19(10.9)	6.2, 15.5
	Black board Presentation	18(9.1)	5.8, 14.8
	Powerpoint Presentation	16(9.1)	4.9, 13.4
	Combination of teaching aids	122(69.7)	62.9, 76.5

Table 1 depicts that among 173 students, female were 53.1% and male students were 46.9%. According to Nationality most of the students were Indian 68.6%, South African 16.6% and Mauritian 14.9% respectively. Most of the students were from 4th Semester 41.7%. Among the best teaching Aids a combination of teaching aids were determined by most of the students 69.7% followed by

dictating notes 10.9%. blackboard and power point presentation 9.1% respectively.

Table 2 depicts that among all the female students 68.8% and 74.4% of all male students preferred a combination of Aids. Among all the South African 75.9%, Mauritian 73.1% and Indian students 67.5% preferred a combination of teaching Aids respectively. Most of the female students 62.2% preferred taking the hand outs after the lecture whereas male students preferred taking down notes during the lectures. This finding was found to be statistically significant. ($p = 0.002$). Both Mauritian 69.2% and South African students 79.3% preferred taking hand outs after the lecture where as the Indian students preferred taking down notes during lectures 61.7%. The finding was found to be statistically significant. ($p = 0.000$).

Table 3 reveals that best perception of diagrams and flow chart in Pharmacology is through combination of teaching Aids preferred by 68.8% of female students and 74.4% of all male students. Among all the South African 75.9%, Mauritian 80.8 % and Indian students 68.3% preferred a combination of teaching Aids respectively.

As per as understanding the Concepts of Pharmacology concerned female students 74.2% preferred whereas 65.9% male students preferred combination of teaching Aids. Both Mauritian 73.1% and South African students 75.9% and the Indian students 68.3% preferred the combination of teaching aids is the best was to understand the concepts of Pharmacology.

Table 4 elicits that best method to stimulate the further reading in Pharmacology is through combination of teaching Aids 50% followed by dictating notes 25.6% among male students and combination of teaching Aids 45.2% followed by dictating notes 29% among all female students. Among all the South African 55.2%, Indian students 48.3% preferred a combination of teaching Aids respectively which stimulates the further reading in Pharmacology. Mauritian students preferred both combination of teaching aids and dictating notes aids equally.

To understand the Classification of drugs of Pharmacology concerned male students 47.6% % and 65.9% of female students preferred combination of teaching Aids. Most of the South African, Mauritian and Indian students preferred a combination of teaching aids to understand the classification in Pharmacology.

Table 5 reveals elicits that the best method to understand the mechanism of action, understand indications, adverse effects, contraindications, drug Interactions and dose is by



Table – 2 Correlation between best teaching AIDS, preference of taking notes and gender/ nationality

		Best Teaching AIDS				Preference of taking notes during lectures/ hand outs	
		Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Taking notes during Lectures	Taking hand outs after lectures
Gender	Female	2(2.2)	9 (9.7)	18(19.4)	64(68.8)	31(37.8)	51(62.2)
	Male	6(7.3)	9(11)	6(7.3)	61(74.4)	57(61.3)	36(38.7)
	P Value	0.06 ^x				0.002 [†]	
Nationality	South African	1(3.4)	0(0)	6(3.8)	22(75.9)	6(20.7)	23(79.3)
	Mauritian	3(11.5)	3(11.5)	1(3.8)	19(73.1)	8(30.8)	18(69.2)
	Indian	15 (12.5)	15 (12.5)	9(7.5)	81(67.5)	74(61.7)	46(38.3)
	P Value	0.087 ^x				0.000 [†]	

[†]p<0.05, statistically significant, ^xp>0.05, statistically not significant

Table – 3 Correlation between best perception of diagrams and flow chart in Pharmacology, understanding of the concepts of Pharmacology and gender/ nationality

		Best Perception of Diagrams and flow chart in Pharmacology				Understand the Concepts of Pharmacology			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	9(11)	6 (7.3)	61(74.4)	6(7.3)	11(13.4)	8 (9.8)	54(65.9)	9(11)
	Female	9(9.7)	18(19.4)	64(68.8)	2(2.2)	9(9.7)	10(10.8)	69(74.2)	5(5.4)
	P Value	0.06 ^x				0.43 ^x			
Nationality	South African	1(3.4)	6(20.7)	22(75.9)	0(0)	1(3.4)	2(6.9)	22(75.9)	4(13.8)
	Mauritian	3(11.5)	1(3.8)	21(80.8)	1(3.8)	3(11.5)	2(7.7)	19(73.1)	2(7.7)
	Indian	14 (11.7)	17 (14.2)	82(68.3)	7(5.8)	16 (13.3)	14 (11.7)	82(68.3)	8(6.7)
	P Value	0.339 ^x				0.620 ^x			

[†]p<0.05, statistically significant, ^xp>0.05, statistically not significant

Table – 4 Correlation between Best aids that stimulates further reading in Pharmacology , understand and remember the Classification of Drugs in Pharmacology and Gender/ Nationality

		Stimulates further reading in Pharmacology				Understand / Remember the Classification of Drugs			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	6(7.3)	14 (17.1)	41(50)	21(25.6)	10(12.2)	18 (22)	39(47.6)	15(18.3)
	Female	11(11.8)	13(14)	42(45.2)	27(29)	22(23.7)	23(24.7)	29(31.2)	19(20.4)
	P Value	0.663 ^x				0.094 ^x			
Nationality	South African	3(10.3)	5(17.2)	16(55.2)	5(17.2)	3(10.3)	6(20.7)	17(58.6)	3(10.3)
	Mauritian	4(15.4)	4(15.4)	9(34.6)	9((34.6)	7 (26.9)	5 (19.2)	8(30.8)	6(23.1)
	Indian	10 (8.3)	18 (15)	58(48.3)	34(28.3)	22 (18.3)	30 (25)	43(35.8)	25(20.8)
	P Value	0.664 ^x				0.265 ^x			

[†] p<0.05, statistically significant, ^x p>0.05, statistically not significant.

combination of teaching Aids. Among the entire female students 49.5% opted power point presentation as the best way of visualization. Among the South African students 44.8% and Indian 45.8% opted for the power point presentation. Most of the male students 39% agreed that power point and combination of teaching aids is a time saving method to learn Pharmacology. As per as Nationality is concerned 48.3% of all South African students responded

Power point as the most time saving method, whereas for Indian students both PowerPoint and combination of teaching aids are time saving methods.



Table – 5 Understanding the Mechanism of Action, indications, adverse effects, contraindications, dose in reading Pharmacology, best way of visualization and time saving method of teaching and learning Pharmacology

		Understanding of Mechanism of Action of Drugs				Understand indications, adverse effects, Contraindications, Drug Interactions and dose			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	15(18.3)	13(15.9)	44(53.7)	10(12.2)	13(15.9)	14(17.1)	38(46.3)	17(20.7)
	Female	14(15.1)	24(25.8)	44(47.3)	11(11.8)	4(4.3)	22(23.7)	46(49.5)	21(22.6)
	P Value	0.445 ^x				0.07 ^x			
Nationality	South African	1(3.4)	3(10.3)	17(58.6)	8(27.6)	0(0)	7(24.1)	17(58.6)	5(17.2)
	Mauritian	6(23.1)	6 (23.1)	12(46.2)	2(7.7)	2(7.7)	6 (23.1)	13(50)	5(19.2)
	Indian	22 (18.3)	28(23.3)	59(49.2)	11(9.2)	15 (12.5)	23 (19.2)	54(45)	28(23.3)
	P Value	0.037 [†]				0.461 ^x			
		Better Way of Visualization				Time saving method of Teaching and Learning Pharmacology			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	11(13.4)	32(39)	38(46.3)	1(1.2)	6(7.3)	32(39)	32(39)	12(14.6)
	Female	2(2.2)	46(49.5)	43(46.2)	2(2.2)	4(4.3)	37(39.8)	39(41.9)	13(14)
	P Value	0.03 [†]				0.848 ^x			
Nationality	South African	1(3.4)	13(44.8)	15(51.7)	0(0)	0(0)	14(48.3)	11(37.9)	4(13.8)
	Mauritian	0(0)	10 (38.5)	15(57.7)	1(3.8)	1(3.8)	8 (30.8)	13(50)	4(15.4)
	Indian	12 (10)	55 (45.8)	51(42.5)	2 (1.7)	9 (7.5)	47 (39.2)	47(39.2)	17(14.2)
	P Value	0.385 ^x				0.641 ^x			

[†]p<0.05, statistically significant, ^xp>0.05, statistically not significant.

Table - 6 Correlation between the most student friendly aids, 2 way communication, recapitulation during the exams, best method of taking down notes and Gender/ Nationality of students

		Student Friendly				2 way communication between a teacher and student			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	14(17.1)	10(12.2)	42(51.2)	16(19.5)	27(32.9)	7(8.5)	36(43.9)	12(14.6)
	Female	16(17.2)	10(10.8)	56(60.2)	11(11.8)	33(35.5)	9(9.7)	45(48.4)	6(6.5)
	P Value	0.498 ^x				0.366 ^x			
Nationality	South African	1(3.4)	2(6.9)	24(82.8)	2(6.9)	6(20.7)	3(10.3)	19(65.5)	1(3.4)
	Mauritian	4(15.4)	3(11.5)	16(61.5)	3(11.5)	8(30.8)	2(7.7)	12(46.2)	4(15.4)
	Indian	25(20.8)	15 (12.5)	58(48.3)	22 (18.3)	46(38.3)	11(9.2)	50(41.7)	13 (10.8)
	P Value	0.058 ^x				0.301 ^x			
		Recapitulate during exam				Best method of taking down notes			
		Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes	Black board Presentation	Powerpoint Presentation	Combination of teaching aids	Dictating Notes
Gender	Male	14(17.1)	12(14.6)	28(34.1)	28(34.1)	5(6.1)	18(22)	41(50)	18(22)
	Female	14(15.1)	6(6.5)	34(36.6)	39(41.9)	8(8.6)	14(15.1)	53(57)	18(19.4)
	P Value	0.295 ^x				0.564 ^x			
Nationality	South African	1 (3.4)	4(13.8)	15(51.7)	9(31)	0(0)	3(10.3)	17(58.6)	9(31)
	Mauritian	5(19.2)	0(0)	8(30.8)	13(50)	1(3.8)	6(23.1)	13(50)	6(23.1)
	Indian	22(18.3)	14(11.7)	39(32.5)	45 (37.5)	12(10)	23(19.2)	64(53.3)	21 (17.5)
	P Value	0.087 ^x				0.284 ^x			

[†]p<0.05, statistically significant, ^xp>0.05, statistically not significant.



Best Teaching AIDS

In this study Questionnaires are being used to access the best teaching aids used in Pharmacology. Questionnaires are commonly used in such studies [8]. A combination of teaching aids is chosen as the best teaching aids among most of the students followed by dictating notes, blackboard and power point presentation. The finding is quite different to a study piloted by Banerjee et al. at Kathmandu in 2008-2009 reported that Chalk and board was found to be the best aids followed by power point presentation (LCD Slides) and dictating notes [9]. In a similar type of research conducted by Banerjee et al. on 2009- 2010 at Pokhara, Nepal suggests that LCD slides (power point) was the best teaching AIDS tailed by chalk and board teaching methods [10]. Whereas when the similar type of study done in 2013 by Banerjee et al. at Pokhara, Nepal at the same institute of Pokhara, Nepal reveals that the combination of teaching aids is the best method of teaching and learning of Pharmacology[11].

This finding is reasonably similar to the research conducted by Padmanabha T S which has shown that the combination of Aids is the best method of teaching and learning of Pharmacology [1]. Similar type of findings were reported by Mohan L et al., Kasturba Medical College, India August 2009 reported that Mixed Aids is the best method of audio visual aids to teaching and learning of Pharmacology followed by power point presentation and Blackboard and OHP[12].

Female students preferred taking the handouts after the lecture whereas male students preferred taking down notes during the lectures. Mauritian and South African students preferred taking handouts after the lecture whereas the Indian students preferred taking down notes during lectures. This finding is different from a study conducted by Banerjee et al. which has reported that female student preferred taking lecture notes whereas male students preferred taking handouts after the lecture class [11].

Perception of diagrams and flow chart and understanding of the concepts of Pharmacology

The best perception of diagrams and flow chart and understanding of the concepts of Pharmacology is through combination of teaching Aids. This finding is similar to the research done by Padmanabha TS which has found a combination of Blackboard and Power point presentation helps in better understanding of concepts through diagrams, flow charts and understanding the topics of Pharmacology [1].

Further reading

This study reveals that the best method to stimulate the further reading in Pharmacology is through combination of teaching Aids. Among all the South African Indian students preferred a combination of teaching Aids respectively which stimulates the further reading in Pharmacology. Mauritian

students preferred both combination of teaching aids and dictating notes aids equally. According to the medical student's combination of Aids helps understand the Classification of drugs of Pharmacology, mechanism of action, understand indications, adverse effects, contraindications, drug Interactions and dose in a better way than any other method. As per as the best way of visualization and time saving method is concerned Power point presentation is the best method.

Combination of Teaching AIDS

Learning style plays an important role in learning [13]. Combination of teaching aids is recommended as medical students have different learning styles. It may be due to the reason that effective way of use of black board along with power point presentation can be more interactive and rather than one way teaching.

Hypothesis testing

Based on statistical results it was found that power point presentation is not the best method teaching and learning of Pharmacology among undergraduate medical students. Null hypothesis is rejected. A combination of teaching aids is the best teaching aids used for teaching and learning pharmacology is opted my most of the medical students. Alternative hypothesis is accepted.

A combination of different audio visual aids, eg. Blackboard/whiteboard along with power point presentation is the best teaching aid. This aid is best for perception of diagrams and flow chart in Pharmacology, understanding the concepts of pharmacology, classification of drugs, mechanism of action of drugs, indications, adverse effects, contraindications, drug interactions and dose of drugs. Combinations of aids also stimulates further reading in pharmacology and it is a two way interaction between teacher and the student. It also facilitates better recapitulation during exam and taking down notes during teaching and learning of pharmacology.

Conclusion

A combination of different audio visual aids, eg. Blackboard/whiteboard along with power point presentation is the best teaching aid. This aid is best for perception of diagrams and flow chart in Pharmacology, understanding the concepts of pharmacology, classification of drugs, mechanism of action of drugs, indications, adverse effects, contraindications, drug interactions and dose of drugs. Combination of aids also stimulate further reading in pharmacology and it is a two way interaction between teacher and the student. It also facilitates better



recapitulation during exam and taking down notes during teaching and learning of pharmacology.

Limitations & future scope of the study

This research is based on the finding of a medical college of Mauritius. A multi centric study comprising data from all the medical colleges of Mauritius viz. Padmashree D.Y. Patil Medical College, Anna Medical College and the University of Mauritius with higher sample size will be beneficial to assess the best teaching aids used in teaching Pharmacology all over Mauritius.

Abbreviations

Seewoosagur Ramgoolam Medical College (SSRMC), United Arab Emirates (UAE), University of Mauritius (UOM)

Competing interests

The authors do not have any conflict of interest arising from the study

Authors' contribution

IB designed the study, deduced the data, drafted the manuscript, and revised it. AA helped IB in collecting the data. RKG, PN and PD planned the study with IB and revised the manuscript. TI has also participated in the language editing along with IB. BS participated in statistical analysis, interpreted the data. BR and BS critically revised the manuscript. All the authors approved the final document.

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References

1. Padmanabha TS, Manu G, Gajanan P Kulkarni, Chandrakantha T, Neha K. A prospective study of perceptions and preferences of medical students regarding teaching aids in teaching pharmacology in a Medical College from India. *Sch. J. App. Med. Sci.*, 2016; 4(6C):2084-8.
2. Thomas M, AppalaRaju B. Are PowerPoint presentations fulfilling its purpose? *South East Asian J of Med Educ.* 2012; 1: 37-41.
3. Giles RM, Johnson MR, Knight KE, Zammett S, Weinman J. Recall of lecture information, a

- question of what, when, and where. *Medical Education.* 1982;16:264-8.
4. Sir Seewoosagur Ramgoolam Medical College. [Homepage of Sir Seewoosagur Ramgoolam Medical College] [online] 2017 April 21 last update. [cited 2017 April 21]. <https://www.ssrmedicalcollege.com>
5. Sir Seewoosagur Ramgoolam Medical College. The medical educational Resource. [Homepage of medic study] [online] 2017. [cited 2017 April 21]. Available from: URL: http://www.medicstudy.com/directory/listing/sir-seewoosagur-ramgoolam-medical-college?tab=related&p=4&category=0&zoom=15&is_mile=0&directory_radius=0&view=grid&sort=title#sabai-inline-content-related
6. Sathian B, Sreedharan J, Baboo NS, Sharan K, Abhilash ES, Rajesh E. Relevance of Sample Size Determination in Medical Research. *Nepal Journal of Epidemiology* 2010, 1:4-10.
7. Sathian B, Sreedharan J, Banerjee I, Roy B. Simple sample size calculator for medical research: a necessary tool for the researchers. *Medical Science.* 2014;2:141-4.
8. Metcalfe DH, Mathura M. Students perception of good and bad teaching: a report of a critical incident study. *Medical Education.* 1995; 29: 193-197.
9. Banerjee I, Jauhari AC, Bista D, Johorey AC, Roy B, Sathian B. Medical Students View about the Integrated MBBS Course: A Questionnaire Based Cross-sectional Survey from a Medical College of Kathmandu Valley. *Nepal Journal of Epidemiology* 2011;1: 95-100.
10. Banerjee I, Jauhari CA, Johorey CA, Gyawali S, Saha A. Student's Accreditation of integrated Medical Education in Nepal. *Asian Journal of Medical Sciences* 2011;2: 49-52.
11. Banerjee I, Roy B, Sathian B, Pugazhandhi B, Saha A, Banerjee I; Teaching Aids in Pharmacology Teaching and Learning Methodology: A Study from a Medical College of Nepal. *International Journal of Interdisciplinary and Multidisciplinary Studies.* 2013; 1:1-7.
12. Mohan L, Sankar PR, Kamath A, Manish MS, Eesha B R. Students' attitudes towards the use of audio-visual aids during didactic lecture in pharmacology. *Journal of Clinical and Diagnostic Research* 2010; 4: 3363-8.
13. Ismail HEL and Mohamed K. Learning Style and Behavior Analysis A Study on the Learning Management System Manhali. *International Journal of Computer Applications* 56, 2012,975-8887.