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Teaching Aids in Pharmacology Teaching and Learning Methodology: A Study from a Medical College of Nepal

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Abstract

The main objective of the study was to find out students liking regarding the various audio visual aids which can improve the lectures in Pharmacology in future in Nepal. This was a cross sectional questionnaire based study was carried out at Manipal College of Medical Sciences, Pokhara, Nepal between January - July 2013. Chi square test were used for analytical purpose. We calculated odds ratios and their 95% confidence intervals (95% CI). P-value < 0.05 was considered to be statistically significant. Questionnaire validation tests showed that the Alpha Cronbach was 0.68. Two eighty two preclinical medical students participated in the study. Two seventy two students completed the questionnaire completely and their responses were evaluated which gives an overall response rate of 96.45%. 52.6% of the students were males and rest were females. Based on the Nationality 41.2% were Indians followed by Nepali 30.1%, Srilankan 25.7% and Maldivian were 2.9%. According to the students the best teaching aids were combination of teaching aids was opted by 61% of the students followed by power point presentation 31.6%, black board 5.9% and dictating notes 1.5%. Most of the students preferred handouts after lectures 56.6% and 43.4% preferred taking notes during lecture classes. Female student preferred taking lecture notes whereas male students preferred taking handouts after the lecture class. It was found that male student has a [OR 4.834, 95% (CI 2.882, 8.109)] more tendency of taking hand outs after the lecture class as compared to taking down notes during lectures. This finding was statistically significant (P<0.05). It is concluded from the study that a combination of different Audio visual aids, viz. blackboard presentation and power point presentation together can improve the lectures and will facilitate the medical student to understand Pharmacology in a better way.

Keywords: Audio visual, Medical student, Nepal, Pharmacology.

Introduction

In Nepal Medical education is an integrated teaching of four and half years for MBBS degree¹. In Nepal MBBS course is divided into nine semesters. First two years all the seven subjects like Anatomy, Physiology, Biochemistry, Community Medicine. Pathology, Microbiology and Pharmacology are taught for the first two years, but Community Medicine is continued upto 7th semester. After 4th semester Medicine, Surgery, OBG and Paediatrics are introduced and continued up to 9th semester. ENT, Ophthalmology and Forensic Medicine are introduced in the 6th semester and

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are continued up to 7th semester^{2, 3, 4}. Medical teachers are being used to educate medical students by different audio visual aids by emphasizing key points on a black board or white board, the projection of written or printed matter on transparencies via an overhead projector (OHP) or increasingly nowadays via a computer based system, notably Microsoft power point application and of course, the distribution of preprinted support material and handouts⁵.

Nowadays a medical faculty frequently uses power point presentation for delivering lectures in most of their classes. The main objective of the study was to find out students liking regarding the various audio visual aids at Manipal College of Medical Science, Pokhara, Nepal which can improve the lectures of Pharmacology in future. Manipal College of Medical Sciences, Pokhara was selected for the study because this is the first private medical college of Nepal established on 1994 in collaboration between Manipal group and government of Nepal. It has students from Nepal and also international students from Srilanka, Bangladesh, India, Canada, US and Africa⁶.

Material and Methods

Study design and the participants:

This was a cross sectional questionnaire based study was carried out at Manipal College of Medical Sciences, Pokhara, Nepal between 1st Jan 2012- 1st July 2013.

Data collection:

The study was carried out between 1st Jan 2012-1st Jan 2013 at Manipal College of Medical Sciences, Pokhara, Nepal. The information and data collected includes demographic details such as gender (male and female), Nationality (Indian, Srilankan, Maldivian and Nepali students). Questionnaire validation tests showed that the Alpha Cronbach was 0.68.

Inclusion criteria: 282 preclinical medical students participated in the study. 272 students completed the questionnaire completely and their responses were evaluated which gives an overall response rate of 96.45%. Exclusion criteria: The questionnaire was rejected based on the incomplete filling of the form and absence of the students from the class. 10 questionnaires were rejected based on the above mentioned criteria.

Coding

In binary logistic regression, the outcome is coded as 0 and 1. The target is coded as 1 and the reference group as 0. The codes were used as follows males 1, Taking notes during Lectures 0, dictating notes 0.

Sample size calculation:

By conducting a pilot study of 50 students it is estimated that for 99% confidence interval and, significance level $\alpha = 1\%$, $P = 70\%$, $Q = 30\%$, allowable error = 10%, required sample size was 218. $P =$ percentage of students opted combination of teaching aids as a best methodology in teaching Pharmacology⁷. We got adequate sample size of 272.

Outcome Variable:

The main outcome variable was the best method of teaching and learning methodology in Pharmacology. The best teaching and learning aids used in Pharmacology viz. Dictating notes, power point presentation, black board teaching and combination of aids used.

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Explanatory variables:

Factors which were taken into consideration at individual level were age, gender (male and Nationality (Indian, Srilankan, Maldivian and Nepali). Other factors were preference of taking notes during lectures or to take hand outs after the lectures.

Ethical committee approval:

The Research was conducted in accordance to latest version of the Declaration of Helsinki. Prior the study, ethical committee approval was taken from the institutional ethical committee, Manipal Teaching hospital, Pokhara, Nepal.

Data management and statistical analysis:

The data collected was analyzed using Excel 2003, R 2.8.0 Statistical Package for the Social Sciences (SPSS) for Windows Version 16.0 (SPSS Inc; Chicago, IL, USA) and EPI Info 3.5.1 Windows Version. chi square test was used to observe the difference between different variables and strength of the relationship with logistic regression. $p < 0.05$ was considered as statistically significant. We calculated odds ratios and their 95% confidence intervals (95% CI). $p < 0.05$ was considered as statistically significant⁸.

Results

The mean age of Indian, Nepalese, Maldivian and Sri Lankan students were $18.3 \pm SD 0.7$, $18.6 \pm SD 0.8$, $19.0 \pm SD 0.7$ and $18.0 \pm SD 1.5$ years respectively. 52.6% of the students were males and rest were females. Based on the Nationality 41.2% were Indians followed by Nepali 30.1%, Srilankan 25.7% and Maldivian were 2.9%. According to the students the best teaching aids were combination of teaching aids was opted by 61% of the students followed by powerpoint presentation 31.6%, black board 5.9% and dictating notes 1.5%. Most of the students preferred handouts after lectures 56.6% and 43.4% preferred taking notes during lecture classes (Table 1).

Female student preferred taking lecture notes whereas male students preferred taking handouts after the lecture class. $P < 0.05$. Female students preferred combination of teaching aids 54.2% whereas it was preferred by 45.8% males. Powerpoint was opted by 61.6% males and 38.4% females. Black board presentation was opted by 75% males. All the values were found to be statistically significant ($p < 0.05$) (Table 2).

Determinants of best teaching aids by logistic regression

From the point of view of logistic regression analysis, it was found that male student has a [OR 4.834, 95% (CI 2.882, 8.109)] more tendency of taking hand outs after the lecture class as compared to taking down notes during lectures. This finding was statistically significant. It was also found that male student has [OR 3.00, 95% (CI 0.312, 28.841)] , [OR 1.606, 95% (CI 0.216, 11.957)] and , [OR 0.844, 95% CI (0.116, 6.138)] more preference of blackboard presentation, power point presentation and combination of teaching aids as compared to dictating notes methodology (Table 3).

Discussion

The study which was conducted was a cross sectional Questionnaire based study. Questionnaires are being used commonly as a tool to evaluate teaching and learning among the students⁹.

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It was evident from our study that the students showed a preference for the use of a combination of visual aids 61% followed by powerpoint presentation 31.6%, black board 5.9% and very few students opted for dictating notes methodology 1.5%.. Our finding is parallel to a study done by Kumar A et al in 2012 in India also reported that combination of teaching aids is the best method of teaching and learning methodology¹⁰.

Similar findings were reported by Mohan L at Kasturba Medical college, India which has shown that Mixed Aids 54.9% is the best method of audiovisual aids to teach MBBS subjects like Pharmacology followed by Powerpoint presentation 20.9% and Blackboard and OHP are 19.6% and 4.9% respectively¹¹.

In another study it has shown that the best methods of teaching and learning methods are LCD slides 54.83% followed by chalk and board methods 37%¹.

It could be due to the fact that the use of black board along with power point presentations made the students active participants. Certain concepts and diagrams were better perceived by using power point presentations. In different studied it is reported that use of power point presentations for a better perception of diagrams and flowcharts and was also helpful in taking notes¹².

The result the study is quite different to a study conducted by Banerjee et al at Kathmandu, Nepal in 2008-2009 reported that Chalk and Board methodology was found to be the best 60% followed by LCD Slides 20% and dictating notes 5% was the least preferred teaching method by the students¹³.

The difference in the finding could be due to the fact that powerpoint presentation was not used effectively by the faculty previously. The study is from 2008-2009 and in modern teaching methodology its used has been reduced.

The study has some limitations. This research is based on the finding of a medical college of western Nepal. A multi centric study with higher sample size will be beneficial to assess the best teaching aids used in teaching Pharmacology all over Nepal.

Conclusion

It is concluded from the study that a combination of different Audio visual aids, viz. blackboard presentation and power point presentation together can improve the lectures and will facilitate the medical student to understand Pharmacology in a better way.

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Table 1: Frequency of gender, nationality, best teaching aids and Preference of taking notes during lectures/ hand outs

		(n= 272)	Percent ages (%)
Gender	Male	143	52.6%
	Female	129	47.4%
Nationality	Indian	112	41.2%
	Srilankan	70	25.7%
	Nepali	82	30.1%
	Maldivian	8	2.9%
Best Teaching AIDS	Dictating Notes	4	1.5%
	Black board Presentation	16	5.9%
	Powerpoint Presentation	86	31.6%
	Combination of teaching aids	166	61%
Preference of taking notes during lectures/ hand outs	Taking notes during Lectures	118	43.4%
	Taking hand outs after lectures	154	56.6%

Table 2: Relationship of Gender, Nationality of students with Best Teaching AIDS and preference of taking notes during lectures/ hand outs

		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 during lectures
Gender	Female	2(50)	4(25)	33(38.4)	90(54.2)	81(68.6)	48(31.2)
	Male	2(50)	12(75)	53(61.6)	76(45.8)	37(31.4)	106(68.8)
	P Value	0.028†				0.000†	
Nationality	Indian	1(25)	4(25)	34(39.5)	73(44)	47(39.8)	65(42.2)
	Srilankan	2(50)	4(25)	20(23.3)	44(26.5)	29(24.6)	41(26.6)
	Nepali	1(25)	8(50)	29(33.7)	44(26.5)	36(30.5)	46(29.9)
	Maldivian	0(0)	0(0)	3(3.5)	5(3)	6(5.1)	2(1.3)
	P Value	0.668×				0.325×	

† $p < 0.05$, statistically significant, × $p > 0.05$, statistically not significant.

Table 3: Logistic Regression table of Best Teaching aids, Preference of taking notes during lectures/ hand outs

			Male students Odds Ratio (Confidence Interval)
Best Teaching aids	Dictating Notes	1	
	Black board Presentation		3.000(0.312, 28.841) ×
	Powerpoint Presentation		1.606(0.216, 11.957) ×
	Combination of teaching aids		0.844(0.116, 6.138) ×
Preference of taking notes during lectures/ hand outs	Taking notes during Lectures	1	
	Taking hand outs during lectures		4.834(2.882, 8.109) †

† $p < 0.05$, statistically significant, × $p > 0.05$, statistically not significant.