Original Research Article

Evaluation of impact of an integrated lecture method of teaching among undergraduate medical students, compared to traditional didactical lectures in reference to antenatal care

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ABSTRACT

Background: In traditional lecture method of teaching most of the time there is time consumption, duplication and overlapping of topics taught in the MBBS course. Integration (both horizontal and vertical) of subjects improves the cognitive and psychomotor domains of students to enhance their skills to correlate clinically to obtain an accurate diagnosis.
Methods: The present study comprised of 96 students of 3rd semester MBBS course. A pretested questionnaire was given to study their existing level of knowledge and attitude regarding antenatal care. The students were divided into two groups by simple random method - a study group of 48 students, who receive integrated teaching including didactic lectures, case studies and live demonstrations by department of Community Medicine and Obstetrics and Gynaecology, whereas the control group of 48 students received only didactic lectures. Post test was conducted after 3 days. The mean knowledge and attitude scores of pre-test and post-test of the two groups were analyzed by using Z-test.
Results: In the post test, the mean knowledge score between traditional and integrated groups were 12.40 and 14.46 respectively with standard deviation of 1.869 and 1.864. Whereas the mean values of attitude is 36.95 and 60.00 with standard deviation of 1.972 and 1.977. There was a significant improvement in both knowledge and attitude of students of integrated group as compared to traditional group (P<0.001).
Conclusions: Integrated method of teaching was found to be more effective than traditional lecturing method.

Keywords: Integrated teaching, Traditional teaching

INTRODUCTION

The word "Integrate" is derived from Latin root "integrate" meaning "make whole", means to form, to coordinate, blend into a functioning or "unified whole" (Guilbert 1987). Integration in education is defined as the coordination of different teaching –learning activities to ensure the harmonious functioning of the educational process for more effective learning by students.[1] The teaching pattern in most of the medical colleges in India is practiced by traditional (didactic lecture) method. Most of the time there is duplication, time consumption, and overlapping of topics taught in the MBBS course.

Now teaching learning methods are in a new dimension in all medical colleges of India with the establishment of Medical education department supervised by Medical Council of India. The Medical Council of India currently

stresses on the need-based curriculum to create interest among the students.[2] The integrated teaching methodology (both horizontal and vertical) is a holistic, methodical and planned approach which provides more benefits to students, facilitators and the institution as a whole. Integration can be done in two ways. First the Horizontal Integration-Two or more basic science departments (Anatomy, Physiology and Biochemistry) teaching concurrently merge their educational identities. Second is Vertical integration-integration between disciplines traditionally taught in the different phases of curriculum. Thus teaching Anatomy and Pathology with Surgery or Physiology and Pharmacology with Medicine would be an example of vertical integration. (CISP 2012, MCI).[3]

The Medical Council of India in its amendment 2012 has recommended the integrated method of teaching in the medical education curriculum, i.e. the integration should be aligned and integrated horizontally and vertically in organ systems with clinical correlation that will provide a context for the student to understand the relationship between structure and function and interpret the anatomical basis of various clinical conditions and procedures. The present study was done with a view to know the impact of integrated teaching on the topic antenatal care among the 3rd semester MBBS students with objectives of

- To study the existing level of knowledge and attitude of 3rd semester MBBS students regarding antenatal care (ANC), and to assess the change after integrated and traditional lecture method of teaching on ANC.
- To study the impact of integrated teaching in improving the knowledge, attitude of 3rd semester MBBS students, as compared to traditional lecture method of teaching.

METHODS

The present study comprised of 96 students of 3rd semester MBBS students. They were randomized into two groups by simple random sampling at Kalinga Institute of Medical Sciences (KIMS)-KIIT University, Bhubaneswar, Odisha. This study has been conducted with a view to assess the impact of integrated teaching in improving the knowledge and attitude of 3rd semester MBBS students as compared to traditional method of teaching.

Non-probability sampling technique was followed as it is an intensive and purposive study on all 3rd semester MBBS students available in whole class. The number of students present was 96, which is >30 and is a large sample to be studied for this particular study.

Study groups: All the 96 students were given a pretested questionnaire to study their existing level of knowledge and attitude regarding antenatal care. The questionnaire testing the knowledge consisted of 20 multiple-choice

questions (MCQs)-with single best response covering issues on the topic antenatal care. It also contained 06 item questionnaires addressing the attitude of students which was measured by an attitude 5 point Likert scale. (Each item was rated as 5-strongly agree, 4-agree, 3-neither agree nor disagree, 2-disagree, 1-strongly agree). The students were divided into two groups by simple random sampling using Lottery method- a study group of 48 students. The study group received integrated teaching on antenatal care by didactic lectures, case studies and live demonstrations of antenatal case by a faculty from both departments of Community Medicine and Obstetrics and Gynaecology, whereas the control group of 48 students received only didactic lectures by a faculty from Community Medicine. Post test was conducted after 3 days. The effectiveness of the study was assessed by analyzing pre and posttest questionnaires. The mean knowledge and attitude scores of pre-test and post-test of the two groups were analyzed by using Z- test as the sample size is large i.e. >30.
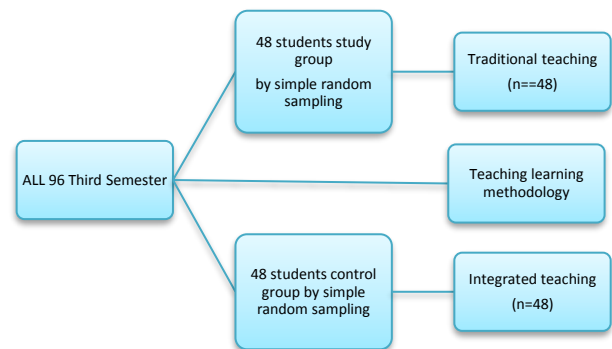

Figure 1: Selection of study and control group.

RESULTS

The result provides the value of $Z=8.69$ when the comparison between the mean traditional pre-test knowledge and the mean integrated pre-test knowledge was made at 95% C.I, and the test was found to be statistically significant, indicating a significant difference between the two attributes i.e. integrated pre-test knowledge is proved to have better improvement and $P<0.001$. Further the value of $Z=5.41$ when comparison between traditional post-test knowledge and integrated post-test knowledge was made at 95% C.I and the test was found to be statistically significant showing a significant difference between these two attributes, i.e. the post-test integrated knowledge showed better improvement in comparison to traditional post-test knowledge and $P<0.001$ (Table 1).

When the comparison between traditional pre-test attitude and integrated pre-test attitude was made the value of $Z=1.55$ which is <1.96 and the test was found to be not statistically significant with value of $P=0.1211$. Hence no significant difference between these two attributes was noticed. Further when the comparison between traditional

post-test attitude and integrated post-test attitude value was made, the value of Z=57.05 which is >1.96 and the test was found to be statistically significant with value of P<0.0001. Hence significant improvement (difference) in

integrated post-test attitude was proved. There was a significant improvement in both knowledge and attitude of students of integrated group as compared to traditional group (P<0.001) (Table 2).

Table 1: Difference of mean knowledge score between traditional groups and integrated groups.

Group statistics							
	Group	N	Mean	Std. deviation	Std. error mean	Z-value	p value at 95%CI
Pre-test Knowledge	Traditional	48	6.178	2.054	0.290	8.69	P<0.0001 Significant
	Integrated	48	9.888	2.144	0.303		
	Total	96					
Post-test Knowledge	Traditional	48	12.40	1.869	0.264	5.41	P<0.0001 Significant
	Integrated	48	14.46	1.864	0.264		
	Total	96					

Difference of mean knowledge score between traditional groups and integrated groups.

Table 2: Comparison of mean attitude score between traditional group and integrated groups.

Group statistics							
	Group	N	Mean rank	Std. deviation	Std. error mean	Z value	p value at 95%CI
Pre-test attitude	Traditional	48	48.88	2.451	0.301	1.55	P=0.1211
	Integrated	48	48.09	2.545	0.315		
	Total	96					
Post-test attitude	Traditional	48	36.95	1.972	0.265	57.05	P<0.0001
	Integrated	48	60.00	1.977	0.260		
	Total	96					

Comparison of mean attitude score between traditional group and integrated groups.

Comparison between traditional pre-test knowledge and traditional post-test knowledge was made, in which Z=15.51. The test was found to be significant with value of P<0.001 showing the traditional posttest knowledge being significantly different than the traditional pre-test

knowledge. Similarly, comparison between the integrated pre-test knowledge and integrated post-test knowledge was made, in which Z=11.17 with the value of P<0.001 showing a significant difference between integrated post-test knowledge and integrated pre-test knowledge (Table 3).

Table 3: Comparison between pre-test traditional knowledge with post –test traditional knowledge and pre-test integrated knowledge with post-test integrated knowledge.

Group statistics							
Attributes	Group	N	Mean	SD	SE	Z	P-value
Pre-test knowledge	Traditional	48	6.178	2.054	0.290	15.51 Highly Significant	P<0.0001
Post-test knowledge	Traditional	48	12.40	1.869	0.264		
Pre-test knowledge	Integrated	48	9.89	2.14	0.303	11.17 Highly Significant	P<0.0001
Post-test knowledge	Integrated	48	14.46	1.86	0.264		

Comparison between pre-test traditional knowledge with post –test traditional knowledge and pre-test integrated knowledge with post-test integrated knowledge.

Comparison between traditional pre-test attitude and traditional post-test attitude was made with value of Z=11.93, which shows a significant difference between these pre-test and post-test attitude with value of

P<0.0001. Similarly comparison between integrated pre-test and post-test attitude was made with value of Z=25.56, which shows a significant difference between these pre and post-test attitude with the value of P<0.0001 (Table 4).

Table 4: Comparison between traditional pre-test with traditional post –test attitude and integrated pre-test with integrated post-test attitude.

Group statistics							
Attributes	Group	N	Mean	S.D	S.E	Z	P-value
Pre-test attitude	Traditional	48	48.88	2.45	0.30	11.93 Significant	P< .0001
Post-test attitude	Traditional	48	36.95	1.97	0.27		
Pre-test attitude	Integrated	48	48.09	2.55	0.32	25.56 Significant	P<.0001
Post-test attitude	Integrated	48	60.00	1.98	0.26		

Comparison between traditional pre-test with traditional post –test attitude and integrated pre-test with integrated post-test attitude

DISCUSSION

In medical education, the established innovative strategies plays an important role in understanding the subject matter very easily. Patient treatment should always be a holistic approach for better outcome which can be obtained from well-trained doctors.[4] Integration is achieved through exposition and discussion of related experiences which is responsible for retention of facts and improves the recall and activation of knowledge to develop diagnostic reasoning skills.[5] Integrated teaching learning modules help in correlating the signs, symptoms to reach a right diagnosis.

To reach at this point, inter department faculty members have to organize and plan to handle a smooth integrated teaching programme. In this study, the students of integrated group had improved knowledge and attitude as compared to the traditional group. In the post test there was an improvement in the mean knowledge scores of both traditional and integrated group (12.40±1.869) and (14.46±1.864) respectively, and was significantly more in integrated group as compared to traditional group (P<0.001) (Table 1). Similarly, in regard to attitude in the post test the mean value of traditional and integrated group was (36.95±1.972) and (60.00±1.977). Hence there was a significant improvement in the attitude of the students of integrated group (P<0.001) (Table 2).

Similar study finding also revealed by Anjenaya S et al.[5,6] This shows that integrated teaching perceived by students was highly effective. Similar study findings also impressed by Sarmista, Himansu and by Kalpana Kumari.[7,8] So integrated teaching learning method can be adopted in medical teaching curriculum.[7] This reveals that integrated approach to teach medical students can be

an effective strategy as concluded by Vyas R, Jacob M et al and Shafi.[9,10] Present study also shows that there is significant difference between pretest traditional knowledge and post test traditional knowledge of Z-value 15.51 (P<0.001) and significant difference between pretest integrated knowledge and posttest integrated knowledge of Z-value 11.17 (P<0.001) (Table 3). Similar study results supported by Mathur SS et al that in their study group 73.47% had excellent level of knowledge, while in the control group showed 54.28% had an excellent, and the difference of knowledge between these two groups was statistically significant.[11]

In a study on students perception in teaching in an undergraduate medical curriculum, the students indicated that integrated teaching improves the performance in clinics.[8] Study reported by Schmidt HG that students trained with integrated curriculum were more accurate in diagnosis of the clinical disorders than those trained in a conventional curriculum.[12]

CONCLUSION

As Integrated method of teaching was found to be more effective in improving the knowledge and attitude of students than traditional lecturing method, so integrated method of teaching needs to be implemented in the medical education curriculum for better understanding and best outcome which is need of the hour.

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