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Original Article

A comparative study of different teaching learning methods in improving student's knowledge and communication skills

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ABSTRACT

Introduction: An effective combination of different teaching methods is required for producing competent medical graduates who are knowledgeable and skilled.
Objectives: To assess the effectiveness of different T-L methods in improving the knowledge and communication skills of medical students.
Methodology: This study was an interventional, analytical study in which 100 MBBS students were divided into four equal batches A, B, C, D, after taking informed consent. Different teaching learning methods were employed for different groups including didactic lectures, interactive and integrated lectures. Additionally for teaching communication skills, videos and role plays, were employed.
Results: The mean marks obtained in Pre-test, Post – test, were analysed using a paired T-test. A statistically significant improvement in the knowledge scores was observed for all the four groups ($p<0.0001$). The percentage gain in knowledge scores for groups A, B, C, D, was 21.4%, 24.4%, 27.6%, 28.6%. The percentage gain in communication skills assessment for groups A, B, C, D, was 22.8%, 28.5%, 40.0%, and 45.7%, respectively. **Conclusion:** Integrated and interactive teaching improves the learning outcome among the students compared to traditional didactic lectures. Similarly, role plays and video demonstrations are more effective in improving the communication skills of students.

Key words: Integrated teaching, Interactive teaching, communication skills, Kalamazoo, didactic

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INTRODUCTION

Health sector in India is faced with unique dilemma. On one hand there is a shortage of qualified doctors and on the other hand regulating the quality of ever increasing number of medical institutions is a big challenge. The Medical Council of India has envisioned an 'Indian medical Graduate' who would be a skilled and motivated basic doctor competent to function effectively as a physician of first contact.[1] The focus has shifted from acquiring lots of knowledge to be able to perform basic essential skills with competence. This calls for a change in the way we approach medical education and for incorporating certain reforms like competency based medical curriculum, integrated and learner centred teaching, early clinical exposure, incorporating professionalism and ethics, etc. The division of the medical curriculum into pre-clinical, para clinical, and clinical ensures a temporal segregation of different aspects of the topic under study.

The newly selected medical student often gets to meet his first patient in the 'third year'. Hence students perceive the pre, para subjects as 'dry' and boring in the absence of a definite clinical context. Integrated teaching has emerged as an important strategy in medical education as it promotes deeper learning, better retention and recall, and in general promotes more effective learning.[2] It is said to dissolve the barriers between preclinical, paraclinical, and clinical subjects and promote better comprehension of the topic by providing a real life clinical context to theoretical 'dry' concepts. [3] Similarly, didactic lectures are often under criticism for relying too much on theoretical information, promoting passive learning, and perceived as boring by the students. They fail to encourage the application of information by the students, development of critical thinking skills, and change in attitudes and behaviour.[4] Interactive lectures can promote active learning, heighten attention and motivation, give feedback to the teacher and the student, and increase satisfaction for both. The various techniques to bring about interactivity in didactic lectures like asking questions, think pair share, demonstration, crossword, concept maps, point of the day, etc are increasingly being employed and recommended, especially in medical education.[1] The focus is on enhancing learning in learner friendly way by adopting a learner focused teaching learning methodology.

The present study was an attempt to pilot integrated interactive teaching methodology in our department, and was conducted to assess the effectiveness of different integrated and interactive teaching methods as compared to traditional didactic classroom teaching. Cardiovascular diseases represent an important area in the field of non-communicable diseases wherein non-pharmacological methods like increased physical activity, quitting tobacco use and diet regulation play an important role.[5] The medical students are expected to be competent in providing dietary advice to patients with cardio- vascular diseases. This not only requires the detailed knowledge of nutrition, dietetics, role of nutrients in pathophysiology of cardio- vascular diseases, but also good communication skills on the part of the students. The present study aims to assess impact of different teaching methods in developing competence in medical students for imparting lifestyle advice to patients with cardiovascular diseases by introducing an interactive integrated teaching program.

Aims and Objectives

1. To study the effectiveness of different teaching methods in developing cognitive domain (Knowledge) about cardiovascular diseases.
2. To compare the different approaches applied to develop student's communication skills to effectively counsel patients about life style modification, under faculty supervision.

METHODOLOGY

The study was conducted in the Department of Community Medicine, Dr RPGMC, Kangra, HP, from October, 2015- June 2016. It was an Interventional analytical study. Prior ethical approval for the study was taken from the Institutional Ethics Review Committee. The study participants were the 3rd semester MBBS students (2014 batch). There were 100 students in this batch. The groups of 25 students each (A,B,C,D) coming for clinical posting in Community Medicine were included in this study. An informed consent for participation in the study was taken. All the students willing for participation were enrolled in the study. The following methodology was adopted for the different batches of students:

a. Batch A: Pretest; didactic lecture in tutorial class covering role of nutritional factors in cardiovascular diseases, communication skills and interview technique, by the faculty of Community Medicine department ; post test.
b. Batch B: Pretest; integrated teaching session covering role of nutritional factors in cardiovascular diseases, communication skills and interview technique; Posttest.
c. Batch C: Pretest; integrated, interactive teaching session covering role of nutritional factors in cardiovascular diseases,

communication skills and interview technique; Posttest.

d. Batch D: Pretest; interactive and integrated teaching session covering role of nutritional factors in cardiovascular diseases; video demonstration and role plays for teaching communication skills and interview technique; post test.

A Pre test was taken prior to starting the study. It consisted of 20 MCQ of 1 mark each. Maximum marks were 20 and time allotted was 30 minutes. The pretest contained questions related to various aspects of nutrients, nutrition, role of nutritional factors in the pathophysiology of cardiovascular diseases, etc.

The integrated teaching session on role of nutritional factors in cardiovascular diseases was held jointly with the faculty from biochemistry, physiology, community medicine and cardiology. Prior to the interactive, integrated teaching session the faculty from the contributing departments was sensitized about the integrated teaching methods and the session outline and contents were discussed with them. Interactive integrated lectures, including case based learning, problem based learning, were used to develop the cognitive aspect related to nutrition, nutrients, role of various nutrients in the pathophysiology of cardio- vascular diseases, and dietary advice in cardiovascular diseases. All the departments were allotted 40 minutes each for the lecture. The sessions were made interactive by techniques like:

a. Think, pair, share : discussion of a deranged lipid profile report.
b. Showing steps of BP measurement on power point presentation, both correct and incorrect method and students are required to say right and wrong.
c. A clinical case history based diet chart planning.
d. An exercise on calorie counting of junk foods eaten in the previous 24 hours by the students.

Similarly communication skills and interview technique were discussed in didactic lecture for Group A, in integrated teaching session for Group B, in integrated and interactive teaching session for Group C, and by role plays and video demonstrations for Group D. Video demonstration of good communication skills and a role play by the faculty and PG students where students were required to point out the correct and incorrect communication practice. A post test was conducted after the teaching session using the same questionnaire that was used for the pretest.

The impact of the integrated teaching was assessed by the calculating the gain in knowledge in form of improvement in post test scores over the pretest scores. The communication skills were assessed by direct observation using a checklist. This was done during the clinical posting in Community Medicine. The students were allotted families in the community posting and were required to counsel families for preventive measures against cardiovascular diseases. The communication skills were assessed using the Kalamazoo essential elements communication checklist (Adapted).[6] The KEECC-A consists of 7 items, each of which correspond to one of the seven essential elements of physician communication. For this, the responses are scored on a 5-point Likert scale (1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent). A total communication skills score is then calculated by adding the individual scores for the different items in the checklist.[7] The feedback of the students and the participating faculty members about the teaching learning methodology adopted was obtained. The data was analyzed using appropriate statistical tests.

RESULTS

Knowledge domain: The mean marks obtained in Pre-test, Post – test, were analysed using a paired T-test. A statistically significant improvement in the knowledge scores was observed for all the four groups ($p<0.0001$). The percentage gain in knowledge scores for groups A,B,C,D, was 21.4%, 24.4%, 27.6%, 28.6%. The results are tabulated in Table 1 and depicted in figure 1. Table 2 shows the mean gain in knowledge scores for the different groups.

An analysis of variance (ANOVA) of the student wise gain in marks (post test – pre test) was carried out for the four groups, which yielded significant difference among mean scores, $F(3,96) = 4.5692$, $P < 0.0049$. A post hoc comparison using the Tukey post hoc analysis test indicated that the difference in mean gain scores was highly significant for A vs D ($p < 0.01$), significant difference was observed in gain scores of group A vs C ($P < 0.05$). For all the other pairs, the difference in gain scores was not statistically significant.

Assessment of communication skills: Kalamazoo essential elements communication checklist (Adapted) was used for assessment of communication skills.[6] A statistically significant gain in post test scores over the pre test scores was observed for all the groups on a Students paired t-test ($p<0.0001$). The percentage gain in communication skills assessment for groups A, B,

C, D, was 22.8%, 28.5%, 40.0%, and 45.7%, respectively. The results are tabulated in Table 3, and depicted in Figure 2. Table 4 shows the mean gain scores in communication skills for the four groups.

An analysis of variance (ANOVA) of the student wise gain in marks (post test – pre test) was carried out for the four groups, which yielded significant difference among mean scores, F (3,96) =66.1157, P < 0.0000 . A post hoc comparison using the Tukey post hoc analysis test indicated that the difference in mean gain scores was statistically significant for all pairs ($p<0.05$).

The students perceived barriers in communicating effectively with the patients was assessed and are presented in the figure 3 below:

Students feedback of the Integrated, Interactive teaching program:

A structured feedback was taken from the students who were exposed to the new interactive and integrated teaching methodology. 86% students rated the new methodology as 'Very useful', 14% as 'useful', on a 3- point Likert scale. 90% students felt that it would help in better learning and longer retention. The use of role plays and video demonstrations for communication skills teaching was appreciated by most of the students. 33% participants however felt that the sessions were very detailed and seemed tiring at times. Overall, the Integrated, Interactive teaching program was liked by the students, with 92% students expressing willingness for more topics to be taught using this teaching methodology.

Feedback of the teaching faculty about integrated teaching: All the participating faculty members (n=8) agreed that integrated teaching is better than traditional didactic teaching for improving students knowledge and understanding of the study area. Students are able to comprehend the various aspects of a given topic from multiple angles. Hence there are more chances of concept clearing, better understanding and long term retention of the subject. However most members (78%) felt that successful implementation of integrated teaching requires initial sensitization of all faculty and even students, high level of motivation on the part of teaching faculty, a very rigorous planning and implementation, and good interdepartmental understanding at various levels. Most faculty members (80%) felt that individual departments may not be able to sustain integrated teaching at their level, unless it is adopted at the institutional level.

Discussion

Medical education has witnessed a revolution in the recent years. There has been an increasing recognition of the medical students as 'adult learners', who are self-directed, practical and motivated, to take up responsibility for their own learning. Also the information age, has provided them access to all sorts of teaching learning aids at the click of the mouse. In this scenario, the medical teachers are also experiencing a role reversal, from the disseminator of knowledge to the facilitator of learning. The present study attempted to study the impact of different teaching methodologies like traditional didactic lectures, integrated and interactive teaching methods on the knowledge and communication skills of the students. All the intervention groups demonstrated a significant increase in the mean knowledge score and communication skills score in the post test as compared to the pre test scores ($p<0.05$). However the greatest improvement was observed in the groups C and D, where integrated and interactive teaching methods were used. The mean scores improved from traditional didactic lectures to integrated and interactive lectures. Similar results have been documented in different studies.[7,8,9] Yadav et al,[7] in their study compared integrated teaching with traditional teaching, and reported that both the groups showed a significant improvement in post test scores but increase in mean score was more in integrated group. Similarly, Shah et al,[8] in their study compared integrated teaching with traditional teaching and concluded that integrated teaching was more effective. They also reported that 95% of students agreed to integrated lecture providing better understanding of subject and learning skills.[8]

In our study it was observed that the students who were exposed to integrated and interactive teaching, also performed better on communication skills score. They were more confident in communicating with the patients and also were able to counsel them more effectively. Kumari et al,[9] had also reported that the students agreed that integrated teaching was helpful in improving their performance in the clinics and in university exams. Similarly Katyal et al,[10] in their study found that students' communication skills also improved when interactive lectures were introduced. Students were reported to have strongly agreed that interactive lectures make learning enjoyable and interesting.

In a study by Chilwat et al,[11] even though no significant difference in average marks was observed, the interactive lectures were better appreciated by the students than conventional

lectures. 76% students expressed their willing to replace conventional lectures with interactive lectures. It was suggested that structured interactive sessions should be held in small groups. The faculty feedback in our study also expressed a similar view, with 75% faculty members agreeing to using interactive methods in small groups, preferably in tutorial groups. The reasons cited were problems with completing the topic in time, problems with controlling big classrooms, time and resources required for preparing for interactive lectures, etc.

Good communication skills are an important core competency for the Indian Medical Graduate as perceived by the MCI.[1] However teaching of communication skills has often taken a back seat in routine medical teaching, mainly because of the impression that these skills cannot be taught, but have to be imbibed by the students through their interaction with the patients, physicians and their medico-socialenvironment.[12] However different studies have shown that these 'soft skills' can be taught and are appreciated by the students.[13,14,15] The Kalamazoo Essential Communication Checklist is a reliable and valid measure of physician communication skills[16] and was used in our study to assess the students' communication skills. It was observed that the mean communication skills scores were highest when methods like role plays and video demonstrations were used to teach the effective communication skills. According to the students, participatory role-plays were very effective for teaching interpersonal skills because of the aspect of learning by doing. Gupta et all,[17] have also reported similar findings in their study.

Students were also brainstormed about the barriers perceived by them in communicating effectively with the patients. The most common barriers identified were lack of adequate knowledge of local language and vocabulary, and lack of confidence in communicating with patients.

The experience with integrated, interactive teaching generated during this study, provided valuable insight in reviewing the methodology for further integrated teaching sessions for the students. It was realized that more clarity on planning the sessions was required to prevent overlap of the teaching areas. A need for aligning integrated teaching with integrated assessment was also felt. Also, there was need for re-sensitization of the faculty of all departments as well as the students towards integrated, interactive teaching.

Conclusion

Integrated teaching provides a holistic approach to the understanding of the subject matter by the students and hence there is a need to introduce integrated teaching on a larger scale in the medical institutions. Since the teaching schedule of different semesters is usually prepared by the Academics cell of the medical colleges, different departments will have to co- ordinate among themselves if they want to have sessions of integrated teaching. This calls for more interdepartmental co-ordination as well as motivation among the faculty members. Didactic lectures need to be replaced by interactive lectures and different methods to enhance interactivity in the classrooms should be employed. This requires the sensitization and training of the faculty in medical education technology. There is also a need to 'teach' the soft skills like communication skills, empathy, and professionalism to the students. These important skills should not be left unattended for the students to imbibe passively as they form an important core competency for developing competent Indian Medical Graduates.

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Table 1: Mean Pre- Test, Post- test knowledge scores of different groups

Group		Mean	S D	SEM	N
A	Pre Test	9.84	1.31	0.26	25
	Post Test	14.12	1.39	0.28	25
B	Pre Test	9.80	1.26	0.25	25
	Post Test	14.64	1.85	0.37	25
C	Pre Test	9.76	1.56	0.31	25
	Post Test	15.28	1.14	0.23	25
D	Pre Test	9.92	1.80	0.36	25
	Post Test	15.64	1.47	0.29	25

Figure 1:

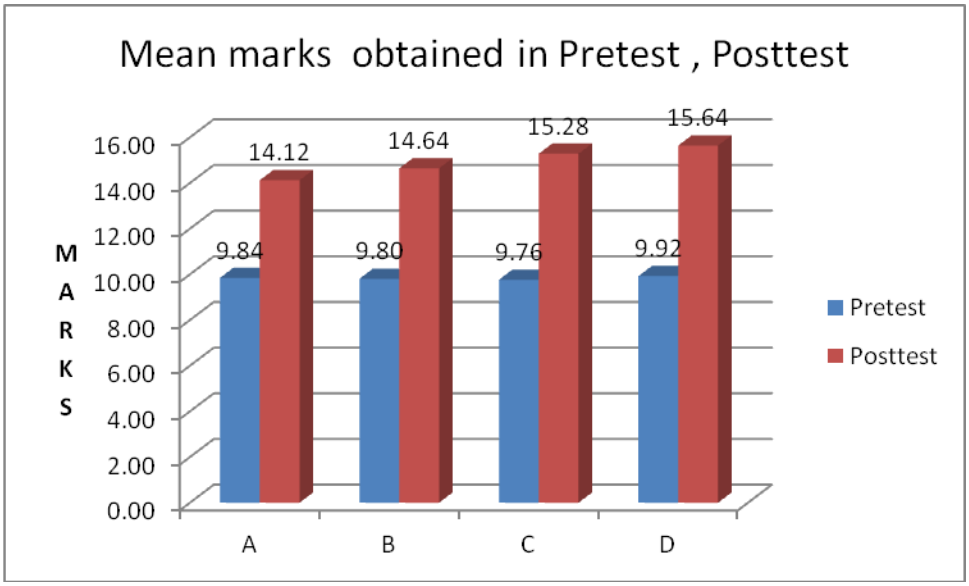


Table 2: Mean Gain Score for different groups in Knowledge domain

Sr No.		Group A	Group B	Group C	Group D
1.	Mean Gain Score (Post Test – Pre Test)	4.28	4.84	5.52	5.72
2.	95 % Confidence Interval	3.55 – 5.01	4.21 – 5.47	4.87 – 6.17	5.21 – 6.23
3.	P value	0.0001	0.0001	0.0001	0.0001

Table 3: Mean Pre- Test, Post- test communication skills scores of different groups

Group		Mean	S D	SEM	N
A	Pre Test	16.00	1.15	0.23	25
	Post Test	24.00	1.50	0.30	25
B	Pre Test	18.00	1.85	0.37	25
	Post Test	28.00	2.78	0.56	25
C	Pre Test	18.00	1.94	0.39	25
	Post Test	32.00	1.44	0.29	25
D	Pre Test	17.00	1.68	0.34	25
	Post Test	33.00	1.00	0.20	25

Figure 2:

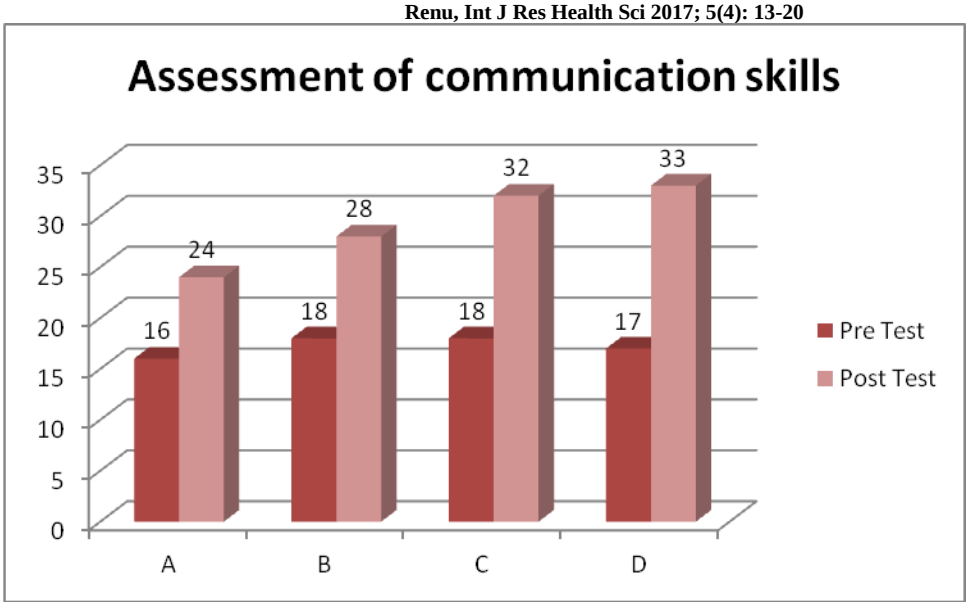
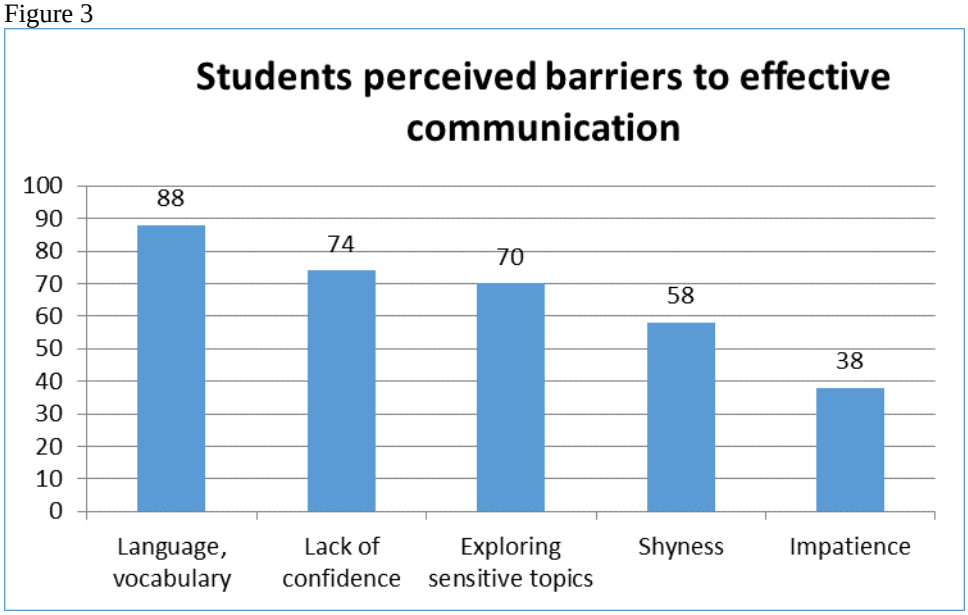


Table 4: Mean Communication Skills Gain Score for different groups

Sr No.		Group A	Group B	Group C	Group D
1.	Mean Gain Score (Post Test – Pre Test)	8.00	10.00	14.00	16.00
2.	95 % Confidence Interval	7.30 – 8.70	8.80 – 11.20	13.11 – 14.89	15.17 – 16.83
3.	P value	0.0001	0.0001	0.0001	0.0001

Figure 3



REFERENCES

1. Vision 2015. New Delhi: Medical Council of India; 2011. [Last accessed on 2016 December 16]. Medical Council of India. Available from: http://www.mciindia.org/tools/announcement/MCI_booklet.pdf .
2. Singh T, Gupta P, Singh D. Integrated teaching. In, Indian academy of Pediatrics Principles of Medical Education (4th ed) . New Delhi: Jaypee Publishers, 2013;22-6.

3. Brauer DG, Ferguson KJ. The integrated curriculum in medical education: AMEE Guide No. 96 Medical Teacher 2015, 37: 312–322.
4. Haranath PSR. Integrated teaching in medicine – Indian scene. Indian Journal of Pharmacology. 2013;45(1):1-3.
5. Buttar HS, Li T, Ravi N. Prevention of cardiovascular diseases: Role of exercise, dietary interventions, obesity and smoking cessation. Experimental & Clinical Cardiology. 2005;10(4):229-249.
6. Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement. Academic Medicine 2001; 76:390-393.
7. Yadav PP, Chaudhary M, Patel J, Shah A, Kantharia N. Effectiveness of integrated teaching module in pharmacology among medical undergraduates. International Journal of Applied and Basic Medical Research. 2016;6(3):215-219.
8. Shah V, Jain UJ. The effectiveness of integrated teaching over traditional teaching in third MBBS students. Int J Med Sci Public Health 2016;5:1430-1432.
9. Kalpana Kumari M.K, Vijaya V, Seema Raja. Student's perception about integrated teaching in an undergraduate medical curriculum. JCDR2011; 6: 1256-9.
10. Katyal R, Singh A, Joshi HS, Chandra S, Singh K. Enhancing student's learning by introducing various interactive teaching-learning methods in large group. International Journal of Biomedical and Advance Research 2016; 7(8): 363-368.
11. Chilwant K.S. Comparison of two teaching methods, structured interactive lectures and conventional lectures. Biomedical Research 2012; 23 (3): 363-366.
12. Joekes K, Noble LM, Kubacki AM, Potts HW, Lloyd M. Does the inclusion of 'professional development' teaching improve medical students' communication skills? BMC Med Educ. 2011;11:41.
13. Choudhary A, Gupta V. Teaching communications skills to medical students: Introducing the fine art of medical practice. International Journal of Applied and Basic Medical Research. 2015;5(Suppl 1):S41-S44.
14. Hausberg CH, Hergert A,Kroger C, Bullinger M, Rose M, Andreas S. Enhancing medical students' communication skills: development and evaluation of an undergraduate training program. BMC Medical Education 2012 12:16.
15. Smith S, Hanson JL, Tewksbury LR., Christy C, Talib NJ, Harris MA, et al. (2007). Teaching patient communication skills to medical students: A review of randomized controlled trials. Evaluation and the Health Professions.2007;*30*(1):3-21.
16. Joyce BL, Steenbergh T, Scher E. Use of the Kalamazoo Essential Elements Communication Checklist (Adapted) in an Institutional Interpersonal and Communication Skills Curriculum. Journal of Graduate Medical Education. 2010;2(2):165-169.
17. Gupta A, Bhatti K, Walia R, Agnihotri P, Kaushal S. Implementation of Interactive Teaching Learning Methods in large Group in Endocrine Pharmacology. Indian Journal of Pharmacy and Pharmacology, October-December 2015;2(4);197-202.