EFFECTIVENESS OF INTERACTIVE LECTURES AS TEACHING METHODOLOGY IN OBG AMONG FINAL YEAR MEDICAL STUDENTS

H. K. Cheema¹, Rajiv Arora²

¹Associate Professor, Department of Obstetrics and Gynaecology, Punjab Institute of Medical Sciences, Jalandhar, Punjab, India.

²Professor, Department of Physiology, Punjab Institute of Medical Sciences, Jalandhar, Punjab, India.

ABSTRACT

BACKGROUND

In conventional lectures, students are passive receivers of information and are not involved in the process of learning. To improve the classic lecture, interaction among the participants is a must. We wanted to compare the effectiveness of small group interactive teaching with traditional didactic teaching in department of Obstetrics & Gynaecology in Punjab Institute of Medical sciences, Jalandhar amongst final year M.B.B.S. students and to assess the perception of students & faculty regarding small group interactive teaching.

METHODS

Students were divided into 2 batches of 75 students each. Batch A was taught by traditional method and Batch B was divided into 5 small sub-groups of 15 students each. These 5 small sub-groups were introduced to group dynamics and the teacher acted as the facilitator. 1st session, Batch A was taught by traditional method, Batch B was taught by small group interactive teaching. Both batches underwent knowledge assessment of topic by MCQ test which was coded, at the end of the session. In 2nd session, for second topic, cross-over was done. The knowledge was again assessed by MCQs, at the end of the session. For 3rd & 4th session, topic was divided into 2 sub-topics, mechanism & stages of normal labour (3) and management of all stages of labour (4). In 3rd session Batch A was taught subtopic (3) by traditional teaching and Batch B was taught sub-topic (3) by small group interactive teaching. In 4th session, cross-over was done for Batch A and Batch B. Both 3rd and 4th sessions were evaluated at the end by MCQs. At the end of the 4th session, a pre-validated feedback questionnaire was filled by the students and faculty. Statistical Analysis was done by using Microsoft SPSS version 19.

RESULTS

On evaluation of MCQ tests & feedback, small group interactive teaching showed better results than traditional teaching.

CONCLUSIONS

Small group interactive teaching is an effective tool for active participation of students, gives better understanding of the concept, with improvement in academic performance.

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BACKGROUND

The conventional undergraduate medical teaching has been the teacher focused didactic lectures. In conventional lectures, students are passive receivers of information and are not involved in the process of learning.⁽¹⁾ Research has shown that traditional lecture method, where the teacher speaks and the students listen, dominate the scene in most of medical colleges, in India.⁽²⁾ In a classical study by Stuart et al, the attention span of a medical student was found to be optimal till 20 minutes following which it rapidly faded off.⁽³⁾ To improve the classic lecture, interactivity between the participants is a must. This promotes active learning, heightens attention & motivation, gives feedback to the students & the teacher and increases satisfaction for both.⁽⁴⁾ If properly planned and organized lectures can be very effective, and can clarify difficult concepts, motivate thinking, foster enthusiasm and motivate for learning.⁽⁵⁾

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Corresponding Author:

Dr. Rajiv Arora,

Professor, Department of Physiology,

Punjab Institute of Medical Sciences, Jalandhar, Punjab, India.

E-mail: drrajivarora@yahoo.com

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Interactive lecture is active involvement and participation by students-therefore the students are no longer passive learners. In this approach, the role of the teacher is more like a facilitator. Commonly used interactive strategy is breaking the class into small groups for active participation & learning. Till now, in the department of OBG, in PIMS, the teaching method has been the conventional didactic lectures. So an attempt was made through this study to find benefits of interactive lectures by assessing the knowledge gained and assessed the perception & preferences using the Likert scale, 1-5. (Strongly agree, agree, neutral, disagree, strongly disagree)

Aims & Objectives

1. To compare the effectiveness of small group interactive teaching with traditional didactic teaching in department of Obstetrics & gynaecology in Punjab Institute of Medical sciences, Jalandhar amongst final year M.B.B.S. students.
2. To assess the perception of students & faculty for small group interactive teaching

METHODS

This project was carried out in department of Obstetrics & Gynaecology, in Punjab Institute of Medical Sciences, Jalandhar (Punjab) the faculty of department of Obstetrics & Gynaecology and 150 final year M.B.B.S. students were enrolled in the project. After taking necessary permissions,

from institutional Ethics committee, the faculty was sensitized, and students' counselling was done about the concept and procedure of small group interactive teaching. To start the study, topics for the study were decided by the faculty --2 main topics with 2 subtopics each, as Fibro-myoma uterus, with 2 subtopics (etiopathogenesis (1)-1st lecture and management of fibro-myoma-2nd lecture (2)) and Normal labour with 2 sub-topics (mechanism and stages of labour (3) 3rd lecture and management of all stages of labour(4) 4th lecture. These topics were intimated to the students one week before the actual sessions. For 1st topic-Fibro-myoma was divided into 2 sub-topics, etiopathogenesis & management. the students were divided into 2 batches of 75 students each. The Batch A was taught by traditional method and batch B was divided into 5 small sub-groups of 15 students each. These 5 small sub-groups were introduced to group dynamics and the teacher acted as the facilitator. 1st session, Batch A was taught etiopathogenesis of fibro-myoma by traditional method, Batch B was taught etiopathogenesis of fibro-myoma by small group interactive teaching. Both batches underwent knowledge assessment of topic by MCQ test, which was coded, at the end of the session. In 2nd session, topic of management of fibro-myoma, cross-over was done. The knowledge was again assessed by MCQ test at the end of the session. For 3rd & 4th session, topic of normal labour was divided into 2 sub-topics, mechanism & stages of normal labour (3) and management of all stages of labour.(4) In 3rd session Batch A was taught subtopic (3) by traditional teaching and Batch B was taught sub-topic (3) by small group interactive teaching. In 4th session, cross-over was done for Batch A and Batch B. Both 3rd and 4th sessions were evaluated at the end by MCQ tests (coded). (Annexure 1-4)

RESULTS

Total students =150 (Participating Students)

	Group	Mean	Std. Deviation	Mean Difference
	Traditional demonstration	11.09	1.416	2.492
	Small group interactive teaching	13.59	1.779	p<0.001

Table 1. Comparison of Effectiveness of Two Teaching Methods (Independent Samples Test) for Fibro-Myoma Uterus- Sub-Topics 1 & 2

Table 1 shows mean score of the students from MCQ tests, which were taken after 1st two lectures. Fibro-myoma uterus (Etiopathogenesis (1) and management)
 (2) The mean score after traditional teachings was 11.09
 The mean score after small group interactive teachings was 13.59.

	Group	Mean	Std. Deviation	Mean Difference
	Small group interactive teaching	13.86	1.388	2.372
	Traditional demonstration	11.49	1.819	p<0.001

Table 2. Comparison of Effectiveness of Two Teaching Methods (Independent Samples Test) for Normal Labour

Table 2 shows mean score of the students from MCQ tests, which were taken after last 2 lectures. Normal labour (Mechanism & stages of normal labour (3) Normal labour (Management of all stages of labour)
 (4) The mean score after small group interactive teachings was 13.86.
 The mean score after traditional teachings was 11.49.

At the end of the 4th session, a pre-validated feedback questionnaire (anonymous) was filled by the students and faculty. Students' feedback was regarding acceptability of each method, making concepts of the topic clear with simplification of topic, increasing interest in the topic, better understanding, stimulation for self- directed learning, effect on teacher-student bond were taken from the students. Last question was an open-ended question, asking for any improvements. Students were asked to anonymously indicate the degree to which they agreed with each statement by choosing one of the options. The Questionnaire was designed after reviewing the literature & after consulting faculty members. (Annexure 5)

A feedback questionnaire was provided to the faculty involved with Likert scale 1-5 (Strongly agree, agree, neutral, disagree, strongly disagree), and their acceptability, active participation of students, effect on teacher-student bond, teachers' satisfaction was taken into account. At the end of the questionnaire, one open ended question with suggestions and limitations, for small group interactive teaching were asked for. (Annexure 6)

Data Analysis

Statistical Analysis was done by using Microsoft SPSS version 19. Comparison of marks gained by two methodologies was done by using independent student t test, involving the significant p value. (Taking p value<0.05) Perceptions& preferences between the two methodologies were assessed by using Likert scale 1-5(Strongly agree, agree, neutral, disagree, strongly disagree) and the results were expressed as percentages and proportions. Result is being represented as tables and charts.

Figure 1. Effectiveness of Small Group Interactive Teaching v/s traditional Teaching

This graph shows clearly the difference of mean scores of MCQ tests after traditional and small group interactive teaching.

Figure 2. Acceptability of Small Group Interactive Teaching by Students

The students showed great enthusiasm for small group interactive teaching which was evident as high acceptability of small group interactive teaching, amongst final year M.B.B.S students, which was interpreted as: 62% students strongly agreed, 21% agreed, while 10% did not show any reaction and 7% did not agree with the concept of small group interactive teaching.

Figure 3. Small Group Interactive Teaching Strengthens Teacher Student Bond

38% students strongly felt that small group interactive teaching strengthens teacher student bond while 35% agreed to it, while 15% had no opinion while 7% disagreed and 5% strongly disagreed.

Feedback of Final Year Medical Students Regarding Small Group Interactive Teaching (n=150)

Sr. No.	Topic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	It helps to clear the concepts.	53%	26%	12%	06%	03%
2.	It helps to stimulate self-directed learning.	32%	23%	28%	07%	10%
3.	Level of student satisfaction is better.	52%	20%	18%	06%	04%
4.	It will help to develop the habit of life long learner.	30%	28%	15%	15%	12%
5.	Is this method of learning acceptable to you?	62%	21%	10%	05%	02%
6.	Do you feel that you understand it better?	46%	26%	13%	08%	07%
7.	Do you think that it involves interest in topic	49%	28%	12%	06%	05%

Table 3. Compilation of Students' Feedback Perceptions

Figure 6. Faculty Perception of Student Teacher Bond in Small Group Interactive Teaching

60% teachers agreed strongly that during small group interactive teaching, teacher student bond is strengthened, 40% agreed, nobody disagreed.

Figure 7. Level of Teachers' Satisfaction in Small Group Interactive Teaching

40% faculty strongly agreed while another 40% agreed to the fact that teachers' satisfaction is better in small group interactive teaching, but 20% faculty did not show any response. Nobody disagreed.

Feedback of Faculty Regarding Small Group Interactive Teaching (n=5)

Sr. No.	Topic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Do you think, active participation of students increases during small group interactive teaching?	60%	40%	0	20%	0
2.	Level of students understanding improves	40%	40%	0	20%	0
3.	Helps strengthen student -teacher bond	60%	40%	0	0	0
4.	Level of teacher satisfaction improves	40%	40%	20%	0	0

Table 4. Compiled Data of Faculty Feedback

DISCUSSION

Results clearly show that knowledge gained after small group interactive teaching was highly significant, with p value <0.001 , as compared to traditional method of teaching.

In this study the students test performance markedly improved with better understanding of the topic, making concepts more clear, with active involvement of students.

The study showed 83% acceptability (62% strongly agreed, 21% agreed) of small group interactive teaching amongst final year medical students, only negligible no of students, only 2% strongly disagreed. 79% (53% strongly agreed, 26% agreed) accepted that small group interactive learning helps to clear the concepts of the topic in a better way. 66% (38% strongly agreed, 28% agreed) students agreed that small group interactive teaching helps to strengthen teacher student bond. 80% (60% strongly agreed, 20% agreed) faculty felt that active participation of students is there with small group interactive teaching.

60% faculty strongly agreed that small group interactive teaching helps to strengthen teacher student bond. 72% students felt that students' satisfaction, with the topic learnt is high with small group interactive teaching. 32% students strongly agreed that small group interactive teaching stimulates self-directed learning. 38% students strongly felt that small group interactive teaching strengthens teacher student bond, while 35% agreed to it.

49% students were of the view that small group interactive teaching develops interest in the topic. 30% students were of the view that small group interactive teaching will help in developing the habit of life long learning, but at the same time 25% disagreed to the concept.

During faculty feedback, it was observed that 60% faculty strongly agreed that small group interactive teaching increases active participation of students 20% agreed to it while another 20% disagreed. 40% faculty felt strongly that level of student understanding improves with small group interactive teaching, while 20% faculty agreed.

60% faculty was of strong opinion that small group interactive teaching helps strengthen the teacher student bond. 40% teachers said strongly that teachers' satisfaction level improved with small group interactive teaching, another 40% agreed, while 20% did not give any response and nobody amongst the faculty disagreed.

Regarding limitations, 60% faculty felt, though small group interactive teaching has benefits, in terms of academic improvement, active participation of students, but due to shortage of faculty in the OBG department and more time consumption, in preparation and execution of small group interactive teaching, it is difficult, at the moment, to implement further, in other topics.

Amongst suggestions from faculty about small group interactive teaching, 40% faculty wanted more briefing of the topic should be done, at the start of class. Amongst suggestions from students about small group interactive teaching, only one thing was stressed upon, that, small group interactive teaching should be started, at the earliest, involving other topics and other departments, as well.

This study clearly shows that effectiveness of small group teaching helped to improve academic performance and small group interactive teaching was very well accepted.

It is well documented that student's attention can be captured by engaged teaching, and making them receptive to, and involved with, the concepts.⁽⁶⁾ Active learning promotes better understanding, retention of the topic, clarifies the doubts better, development of communication skills and better reproducibility.⁽⁷⁾

Feedback is an essential part of learning. Active learning allows teachers to receive feedback on student's needs and perceptions, and on future teaching- learning directions.⁽⁸⁾ interaction during lectures helps to break the monotony, increases attention span promotes active learning and helps students to retain better. In the present study also, it was observed that performance of students improved significantly.

Outcomes: What this Study Adds

1. The study adds that small group interactive teaching as a teaching methodology, in medical education, will develop interest of the students in the subject.
2. Small group interactive teaching will improve the academic performance of medical students. The mean score of students with small group interactive teaching showed results to be highly significant, with p value <0.001 .
3. The study showed 83% acceptability (62% strongly agreed, 21% agreed) of small group interactive teaching among students.
4. 80% (60% strongly agreed, 20% agreed) of faculty felt that active participation of students is there with small group interactive teaching.
5. 53% students strongly felt that small group interactive teaching helps to clear their concepts of the topic taught with better understanding.
6. 77% (49%+28%) students felt that interest in the topic is evoked by small group interactive teaching.
7. 73% (38%+35%) students said that small group interactive teaching helps in strengthening teacher student bond.

CONCLUSIONS

The results of the project clearly suggest that instead of traditional didactic lectures, small group interactive teaching should be encouraged. It motivates students to participate in the class actively which helps in making their concepts more clear, more interesting, with better understanding, strengthening teacher-student bond, with more teacher & student satisfaction levels. Ultimately small group interactive teaching is better for academic performance being a step forward, to make competent IMG, as per MCI guidelines.

Implications

This Innovative technique of small group interactive teaching may be incorporated in teaching of undergraduate students to develop & sustain interest in view of the ultimate aim to produce competent doctors who can serve the community. Interactive small group activities are a motivational tool for improving teaching-learning practices.

ANNEXURE 1**Multiple Choice Questions****Topic=Fibromyoma uterus****Max marks 20 Attempt all questions****Q1 To start with, all fibromyoma uterus are**

1. Interstitial.
2. Submucous.
3. Subserous.
4. Ovarian.

Q2 True regarding fibromyoma uterus

1. Oestrogen dependent tumour.
2. Capsulated.
3. Can lead to red degeneration in pregnancy, where urgent surgery is required.
4. Danazol used for treatment.

Q3 Uterine fibromyoma is associated with

1. Endometriosis.
2. Pelvic inflammatory disease.
3. Ovarian carcinoma.
4. Amenorrhea.
5. Tamoxifen.

Q4 A pregnant woman with fibroid uterus develops acute pain abdomen, with low grade fever, mild leucocytosis at 28 weeks. The most likely diagnosis is

1. Preterm labour.
2. Torsion of fibroid.
3. Red degeneration of fibroid.
4. Infection in fibroid.

Q5 All changes occur in fibroid uterus except

1. Atrophy.
2. Squamous metaplasia.
3. Hyaline degeneration.
4. Calcification.

Q6 Red degeneration of fibroid is most common in

1. Second trimester.
2. Third trimester.
3. Puerperium.
4. First trimester.

Q7 What is the earliest most common presenting feature of anterior cervical fibroid

1. Frequency of urine.
2. Bleeding.
3. Acute abdomen.
4. Constipation.

Q8 In fibroid, which is not seen

1. Amenorrhea.
2. Pelvic mass.
3. Infertility.
4. Menstrual irregularity.

Q9 Least common complication, in fibromyoma uterus is

1. Menstrual disorders.
2. Malignancy.
3. Urinary retention.
4. Degeneration.

Q10 Malignant prevalence in fibroid is

1. 0.5%
2. 1%
3. 5%
4. 10%

ANNEXURE 2**Multiple Choice Questions****Topic=Fibromyoma uterus****Max marks 20 Attempt all questions****Q1 Calcific degeneration occurs most commonly in which type of fibroids**

1. Submucous.
2. Subserous.
3. Interstitial.
4. Cervical.

Q2 All are methods of managing fibroid uterus except

1. Myomectomy.
2. Radiofrequency ablation.
3. Embolization of uterine artery.
4. Laser myomectomy.

Q3 The drug which reduces the size of fibromyoma is

1. GnRH agonists.
2. Danazol.
3. Progesterone.
4. Oestrogen.
5. Mifepristone.

Q4 All are complications of fibroid in pregnancy except

1. Red degeneration.
2. Obstructed labour.
3. PPH.
4. Placenta previa.

Q5 Management options in a 26-years-old woman with 7 x 8 cm fibroid are

1. Follow up.
2. OCP.
3. Myomectomy.
4. Hysterectomy.
5. Danazol.

Q6 Submucosal fibroid is best detected by

1. Hysteroscopy.
2. Laparoscopy.
3. Ultrasonography.
4. Hysterosalpingography.

Q7 Mrs X, 29 years old woman, complains of severe menorrhagia& lower abdominal pain since 3 months. On examination, there is 14 weeks size uterus with fundal fibroid. The treatment of choice is

1. Myomectomy.
2. GnRH analogues.
3. Hysterectomy.
4. Wait & watch.

Q8 All are pre-requisites for myomectomy except

1. D & C report.
2. Husband's seminology.
3. Hysterectomy consent.
4. None of above.

Q9 All following are the indications for myomectomy except

1. Associated infertility.
2. Recurrent pregnancy loss.
3. Pressure symptoms.
4. Red degeneration.

Q10 The surgical treatment of uterine polyp includes

1. Removal by twisting.
2. Removal by morcellation.
3. Hysteroscopy.
4. All of above.

ANNEXURE 3**Multiple Choice Questions****Topic=Normal labour****Max marks 20 Attempt all questions****Q1 Cardinal movements of labour are**

1. Engagement→descent→flexion→internal rotation→extension→restitution→external rotation→expulsion
2. Engagement→flexion→descent→internal rotation→extension→expulsion
3. Engagement→flexion→descent→external rotation→expulsion
4. Engagement→extension→internal rotation→external rotation→expulsion

Q2 which cardinal movements occur during labour

1. Flexion.
2. Extension.
3. Internal rotation.
4. Descent.
5. Asynclitism.

Q3 Duration of latent phase is affected by

1. Early use of sedation.
2. Unripe cervix.
3. Hypertonic uterine contraction.
4. Pre-eclampsia.

Q4 Prolonged latent phase is/are seen in

1. Placenta praevia.
2. Unripe cervix.
3. Excessive sedation.
4. Abruptio placenta.

Q5 Commonest cause of non-engagement of head, at term, in primi is

1. CPD.
2. Hydramnios.
3. Breech.
4. Brow presentation.

Q6 True labour pains include all except

1. Painful uterine contraction.
2. Short vagina.
3. Formation of bag of waters.
4. Progressive descent of foetal presenting part.
5. Cervical dilatation.

Q7 Sensitivity of uterine musculature

1. Enhanced by progesterone.
2. Enhanced by oestrogen.
3. Inhibited by oestrogen.
4. Enhanced by oestrogen & inhibited by progesterone.

Q8 Which is not included in active management of 3rd stage of labour

1. Uterotonic within 1 minute of delivery.
2. Immediate clamping, cutting & cord ligation.
3. General massage of uterus.
4. Controlled cord traction.

Q9 Pain in early labour is limited to dermatomes

1. T10—L1
2. S1—S2
3. L4—L5
4. L2—L3

Q10 Assessment of progress of labour is done by

1. Station of head.
2. Rupture of membranes.
3. Contraction of uterus.
4. Partogram.

ANNEXURE 4**Multiple Choice Questions****Topic=Normal labour****Max marks 20 Attempt all questions****Q1 Percentage of women who deliver on expected date of delivery**

1. 4%
2. 15%
3. 35%
4. 70%

Q2 Bag of membranes ruptures

1. Before full dilatation of cervix.
2. After full dilatation of cervix.
3. After head is engaged.
4. With excessive show.

Q3 Pressure of normal uterine contractions is 190-300 units ---in terms of which units

1. Montevideo units.
2. Cm of water.
3. Mm of Hg
4. Joules/kg

Q4 During active phase of labour, cervical dilatation in primigravida per hour is

1. 1.2 cm
2. 1.7 cm
3. 1.5 cm
4. 2 cm

Q5 Living ligature of uterus is

1. Endometrium.
2. Middle layer of myometrium.
3. Inner layer of myometrium.
4. Perimetrium.

Q6 Definite sign of placental separation in stage 3 of parturition is

1. Gushing of blood.
2. Lengthening of cord.
3. Filling of placenta in vagina.
4. Increase of BP.

Q7 All of the following are indications for early clamping of cord except

1. Pre-term delivery.
2. Post-dated pregnancy.
3. Maternal diabetes.
4. Birth asphyxia.

Q8 True statement concerning active phase of labour

1. Starts when cervix is 3-5 cm dilated.
2. Cervix dilates at 1 cm/hr.
3. Oxytocin should not be used.
4. Epidural analgesia slows the progress of labour.

Q9 Factors which help in descent of presenting part during labour are all except

1. Uterine contraction & retraction.
2. Straightening of foetal axis.
3. Bearing down efforts.
4. Resistance from pelvic floor.

Q10 The perineal injury can be prevented in normal labour by all except

1. Maintaining flexion of head.
2. Timely episiotomy as routine.
3. Slow delivery of head in between contractions.
4. Effective perineal guard.

ANNEXURE 5

Feedback Questionnaire-Final year medical students

Feedback Questionnaire**Final Year M.B.B.S Students****Small group interactive teaching**

Sr. No.	Topic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	It helps to clear the concepts.					
2.	It helps to stimulate self-directed learning.					
3.	Level of student satisfaction is better.					
4.	It will help to develop the habit of life long learner.					
5.	Is this method of learning acceptable to you?					
6.	Do you feel that you understand it better?					
7.	Do you think that it increases interest in topic					
8.	Any suggestions (For Improvement)					

ANNEXURE 6**Feedback Questionnaire****Faculty Feedback**

Sr. No.	Topic	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Do you think, active participation of students increases during small group. interactive teaching?					
2.	Level of students understanding improves					
3.	Helps strengthen student –teacher bond					
4.	Level of teacher satisfaction improves					
5.	Acceptability					
6.						
1.	Any suggestions					
2.	Any limitations					

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