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Didactic Lectures and Interactive Sessions in Small Groups: A Comparative Study among Undergraduate Students in Hawler College of Medicine

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Authors' contributions

This work was carried out in collaboration between all authors. Authors AMS and NGAT conceptualized the study. Authors AMS, NGAT and TSAH participated in designing the study. Authors AMS and NGAT supervised data collection and carried out data analysis. Authors AMS and NGAT drafted and finalized the manuscript. Author TSAH extensively reviewed and edited the manuscript. All authors contributed to interpreting study results and writing the manuscript. All authors read and approved the final manuscript.

Research Article

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ABSTRACT

Aims: To study and compare didactic lectures with interactive sessions in small groups among undergraduate medical students.

Study Design: A quasi-experimental research design.

Place and Duration of Study: Hawler College of Medicine, between October 2011 and May 2012.

Methodology: Two administrative groups of students were selected out of four groups of medical students in their final year at Hawler College of Medicine. A pretest and post test evaluation of both experimental and comparison groups was conducted using the same criteria. A questionnaire was used to address students' perception of the new teaching method. For comparing the results of both groups in the examination, we computed the mean mark achieved by each group (pre and post test). Student's t -test was used to compare means of both groups.

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Results: Out of 72 students who were originally included in the study, 64 students (88.8%) of both groups performed both pre and post test examinations. The age range of the students was 21-26 (mean age \pm S.D 23.25 \pm 1.01). There was no statistically significant difference between the two means (pre and post) of the lecture format ($P = 0.15$), while the difference between the two means of problem-solving interactive class was statistically significant. Students in the study group showed higher marks than students in the lecture format ($P = 0.059$). Twenty eight (90%) students found interactive sessions more active way of learning than lectures, 29 (93%) students agreed that interactive sessions provide more group interactive skills. There were some negative attitudes like heavy workload on students (55%), and uncertainty about the accuracy of information from colleagues (52%).

Conclusion: Effectiveness of small group teaching may depend on the teaching style in small groups.

Keywords: Didactic lecture; small group; interactive session; Hawler College of Medicine.

1. INTRODUCTION

The impact of teaching plays a major role in the learning outcomes in undergraduate medical education. This is more important in generating effective professionals. Its effectiveness depends on how much has been received by the students or the target audience. There are different methods of teaching; lectures, tutorials, seminars, by having a panel of experts, brainstorming, videotapes, class discussions, small group discussions, case studies, role playing etc [1]

The lecture is the most traditional method of imparting knowledge to students. It is the teaching method that is used frequently in the majority of medical schools despite the problems that are often attributed to it [2].

Student learning is one of the primary goals of universities. Suitable student-oriented teaching methods can help motivate students and help them realize their potential. One of these methods is small group teaching. It is student-centered and the tutor plays the role of facilitator [3].

Small group teaching has been the highlights of a revolution in medical education over the last 40 years [4]. Small group teaching is a rather broad term without a clear definition. It covers tutorials, seminars and small problem-solving classes. A small group is a number of people who interact in a face to face situation where the size of the group may vary from a handful of students to around 30 participants and about 8-12 is an optimal number [5, 6]. The concept of interactive sessions and small group teaching is not new. Socrates was a great exponent of this method of teaching [7].

The effectiveness of small group teaching against didactic lectures is well documented [8]. Small group teaching helps in generating free communication between the group leader and the members and among all the participants themselves. The faculty who acts as the group leader is a facilitator, allowing the participants to express themselves [6]. In fact, small group setting provides an ideal opportunity for teachers to facilitate active learner participation [5]. Reducing the size of the class will produce many benefits for teachers and students; for example. Students would receive more individual attention, teachers will be able to manage the students better, discipline problems are likely to be less and there is more interaction

between students and teachers. When the teacher spends less time in managing the students, more time can be utilized in teaching [8].

Small group teaching has become an increasingly important component of undergraduate medical education and many schools with more traditional curricula have incorporated a significant number of small group teaching sessions into undergraduate programmes for medical students [9].

The traditional lecture approach has been the core teaching method in the Iraqi medical colleges. Several activities and initiatives at both national and individual levels have been adopted for reviewing medical college curriculum and introducing new teaching methods in Iraq over the last two decades [10].

The first medical school in Iraq, Baghdad College of Medicine was established in 1927. The college adopted the Edinbrough curriculum, which reflected standard teaching curriculum of the time. Other medical colleges are subsequently established throughout Iraq and all adopted the teaching curriculum of Baghdad College of Medicine [11].

The traditional lecture approach or the content-oriented approach is still the core teaching method followed by Iraqi medical colleges. Several national activities have been adopted for reviewing medical colleges' curricula in Iraq over the last three decades. The purpose was to develop a national curriculum for medical colleges relevant to community needs [10].

Quasi-experiments are studies that aim to evaluate interventions but that do not use randomization. Similar to randomized trials, quasi-experiments aim to demonstrate causality between an intervention and an outcome. Quasi-experimental studies can use pre-intervention and post intervention measurements as well as nonrandom selected control groups [12].

The aim of this study was to study and compare two different teaching methods, didactic lecture and interactive sessions, in small group among undergraduate students in Hawler College of Medicine.

2. MATERIALS AND METHODS

This study was a quasi-experimental, pre and post intervention with control, research done in Hawler College of Medicine. Hawler Medical University (HMU) is located in Erbil city in the Iraqi Kurdistan Region. It includes four colleges: Medicine, Dentistry, Pharmacy, and Nursing. Teaching in the four colleges is in English language. The University is affiliated to the Ministry of Higher Education and Scientific Researches of the Kurdistan Regional Government. College of Medicine has been established in 1977 comprising 12 different basic and clinical departments. It awards Bachelor degree in Medicine and Surgery (M.B.Ch.B).

A sample of 6th year medical students was selected for participating in the study. Sixth year students in Hawler College of Medicine composed of around 140 students, divided into four subgroups, each subgroup comprised 35-37 students. Two groups of students were selected, by simple random sampling method, out of four groups.

The 35 students group (19 male and 16 female) was chosen to receive the experimental model (study group) taught through interactive session while the comparison (control) group

composed of 37 students (20 male and 17 female) and taught through traditional lecture format. The study was carried out at Briaty and Malafandy primary health care centres in Erbil city.

Students in the experimental group received the topics through interactive sessions (problem oriented solving class) while students in the comparison group received topics through traditional lecture format.

A multiple choice pre and post-test consisting of 60 multiple choice questions (MCQs) was developed by the team in cooperation with a neurologist, rheumatologist and a gastroenterologist. Both experimental and comparison groups received a pre-test of knowledge administered at the beginning of the first interactive sessions session and prior to the lecture for those participating in the comparison group. Both groups were re-tested (post-test) following the completion of the education event.

The Research Ethics Committee of Hawler Medical University approved the study and an informed consent was obtained from each participant after giving them full information about the study.

2.1 Educational Intervention

An educational intervention was designed to: (1) Provide students with the knowledge required for diagnosing three common medical problems in primary health care (Headache, Abdominal pain and Backache) effectively; (2) Introduce them to the tools and strategies for the management of these three conditions. The learning objectives of the educational intervention was focused mainly on developing clinical reasoning skills among the students.

Three teachers in Hawler College of Medicine trained in delivering student centred learning programmes were selected to deliver the interactive sessions and lectures. Both groups (The interactive session and lecture) were taught by the same teachers. The interactive sessions comprised 6 cases; all based on actual clinical cases. These cases were developed through consulting experts in the field and were given to the students before starting the session, students discuss with each other all aspects about the case during the session and tutor facilitated the session and clarified some difficult points about the cases when needed. The lectures were designed to cover all key content objectives identified for the study group and given as knowledge based information by the teacher. Oral instructions regarding the process of teaching were given to the students in both groups before starting the experiment.

2.2 Data Collection and Analysis

A questionnaire was used to address perception of students participated in the sessions of the new teaching method. The questionnaire comprised 10 questions. Answers were to be provided on five point Likert scales ranging from one (strongly disagree) to five (strongly agree).

Statistical package for social sciences (SPSS) version 17.0 was used for data analysis. Student's t-test was used to compare means. Paired t test was used to compare between pre and post test scores of a single group, while t test of two independent samples was used

to compare between the mean differences of the two study groups. A p value of ≤ 0.05 was considered statistically significant.

2.3 Validity of the Test

Validity is a quantitative expression that indicates whether a test measure what it was originally intended to measure. Content validity is a form of validity refers to the assessment comprehensiveness or test appropriateness. [13]. Content validity of the tests was evaluated by a committee, which consisted of teachers and experts in three topics under study. A test was developed in which the total pool of selected items was seventy-five. The test was divided into three parts of 25 items each. First part belonged to headache and second part related to backache and the last part related to abdominal pain. Firstly test was presented to the committee. Then pilot testing was conducted with ten students of same level for whom it going to be used. Too easy and too difficult items were discarded in the light of the result of the test. At this stage 15 items were dropped. Thus the final form of the test comprised 60 items (20 items for each topic) was prepared.

3. RESULTS AND DISCUSSION

A quasi experimental design was used in this study as students were not randomly assigned to study groups. The newly implemented interactive session was integrated into the ongoing traditional study programme of the college taking into consideration practical difficulties of randomly assigning students into two groups.

The main difference between a quasi-experimental study and a true experimental study is that in an experimental study, the participants are assigned to a treatment group or a control group by random assignment. While doing so will allow you to get the best evidence of whether or not your intervention had the intended causal effect, random assignment is not always a practical step to take in the real world. It is usually impractical to ask a school or school system to divide up students in their school into two separate classes through random assignment. When random assignment is impractical, the pre-post test design, in this case, may give you the best results with minimal classroom disruptions [12].

Out of 72 students who were originally included in the study, 64 students (88.8%) of both groups sat both pre and post test examinations; 33 students were from the comparison (control) and 31 students were from the experimental (study) group. Study group participants filled out also the questionnaire on subjective perception of the interactive sessions. The age range of the students was 21-26 (mean age 23.25 ± 1.01).

The sample size was small because each administrative group consisted of around 35 students and practically was not possible to add students to each administrative group. It is important that both the treatment group and the control group are of adequate size to be able to determine whether an effect took place or not. While the size of the sample ought to be determined by specific scientific methods, a general rule of thumb is that each group ought to have at least 30 participants. Many other studies done to compare traditional teaching methods with innovative curriculum in different countries used sample size close to our study [14-19].

This study showed that the difference between pre and post test in lecture format was not statistically significant, while there was statistically significant difference between pre and

post test in interactive session. Students in interactive session perform better than students in control group but the difference was not statistically significant.

The mean±S.D pre test mark of the control was 50. ±10.; mean ± S.D post test mark was 54. ±10. and the mean difference was 3.6 There was no statistically significant difference between the two means ($P= 0.15$). The mean± S.D pre test of the study group was 50±10; the mean±S.D mark of post test was 56 ± 9. The mean difference between the two tests was 6.7. There was statistically significant difference between the pre and post test results ($P= 0.009$). While the difference between the mean difference of the control group (3.6) and that of the study group (6.7) was not statistically significant ($P= 0.059$) (Table 1).

Table 1. Mean marks of both groups (study and control)

Teaching method	Type of test	Mean±SD	Mean difference	95% confidence interval	P value
Lecture (Control) group	Pre test	50± 10	3.6	(-8.6) - (-1.3)	0.15
	Post test	54± 10			
Interactive session (study) group	Pre test	50+ 10	6.7	-11.7- (-1.7)	0.009
	Post test	56± 9			

The better performance of students in interactive session could be attributed to the fact that students read the case before coming to the session and did some private study in addition to the interaction during the session which may lead to better retention of information rather than memorization. Worldwide studies evaluating problem solving oriented class (interactive sessions) revealed variable findings. In a study done in Hong Kong, students showed statistically significant improvement in most of the aspects of the learning [16]. In other studies done in India (8) Iran [17] and UK [20] students' scores in interactive sessions was more than lecture format., However, students in both formats showed similar knowledge in a study done in Pakistan [21] and in Netherlands [22] and students performed better in lecture format than problem based learning format in a study done in Hong Kong [23].

Out of 35 students in the experimental group (21 males and 14 females), a total of 31 students (88.5%) filled the questionnaire. The perception of the students was positive toward interactive session through their response to the questionnaire. Twenty eight (90%) students reported that interactive session was a more active way of learning, and twenty-five (81 %) of them mentioned that they feel comfortable in the discussion and twenty nine (93%) agreed that interactive session provides more group interaction skills and 26 (84%) mentioned that interactive session motivated them to use more resources (Table 2).

This is similar to the findings of studies in China [24], Hong Kong [23] and in Iran [17] in which students preferred small group interactive sessions in terms of participatory learning ,team working ,effectiveness ,and developing self learning skills.

In China 89.4 % of the respondents admitted that interactive sessions made them feel satisfied when their ideas were accepted by classmates; 80% reported that problem oriented class was more interactive than their own learning style; the majority of students reported that problem oriented class allowed them to learn on their own [25]. In Malaysia, 79.0% of respondents found problem oriented class sessions interesting; more than 65% of respondents were of the opinion that problem based sessions were beneficial in achieving their learning objectives and allowed in-depth understanding of the topic of study, and

problem based class helped them in linking basic science knowledge to clinical appraisal skills and to develop group interaction skills [26]. In another study done in Hong Kong, many aspects of the small group student-centred activities were highly valued by students [27].

Table 2. Positive attitude of students toward interactive sessions

Statements	Strongly agree and agree N (%)	Undecided No (%)	Strongly disagree and disagree No (%)
Interactive sessions is more active way of learning	28(90)	1(3.2)	2(6.4)
I am comfortable during the interactive session	25(81)	1(3.3)	5(16)
The interactive sessions motivated me to use additional learning resources	26(84)	4(12)	1(3.2)
Interactive session provide group interaction skills	29(93)	1(3.2)	1(3.2)
Enough learning resources available for interactive session	9(29)	11(35)	11(35)

There were some negative attitudes like heavy workload on students (55%), uncertainty about the accuracy of information from colleagues (52%) and stress in attending interactive sessions (22%) (Table 3).

Table 3. Negative attitude of students toward interactive sessions

Statements	Strongly agree and agree N (%)	Undecided No (%)	Strongly disagree and disagree No (%)
Attending interactive session is stressful	7 (22)	4(13)	20(64)
Time was wasted during interactive session	11 (35)	6(19)	14(45)
Teaching was not focused	5 (16)	9(29)	17(55)
Uncertainty about accuracy of information from colleagues	16 (52)	8(26)	7(22)
Heavy workload on students	17 (55)	7(22)	7(22)

Some other studies revealed also some negative attitudes of students toward problem oriented interactive sessions. In China, students reported: uncertainty on the accuracy of the knowledge acquired (80%), time wasted during the session (35.4), teaching was not focused (32.9%), and heavy workload on the students (28.2%) [25]. In a Malaysian study, 27.0% of students found problem oriented class to be very stressful [26]. In Iranian study, students believed that they need longer discussion of the topics [17]. In study done in Hong Kong; students expressed a preference for learning and interacting with teachers than colleagues [27]. In another study done in India, majority of students favored a judicious mixture of didactic lectures and case –oriented problem solving in tutorial classes to be an efficient modality in understanding a system under study [28].

3.1 Limitation of the Study

Small sample size used in this study because each administrative group of students in the target population (6th year students in Hawler College of Medicine comprised 35-37 students and it was not possible to add students to groups. This small sample size may affect the finding of our study.

This study as a quasi-experimental study has a problem with internal validity because the authors have little or no control over many potential extraneous variables any changes observed might just be due to some factor other than the manipulation of the independent variable.

This study is limited to one college; the finding cannot be generalized to other colleges of medicine in Iraq.

4. CONCLUSION

This study shows that effectiveness of small group teaching may depend on the teaching style in small groups and also showed that majority of students have positive attitude toward problem oriented interactive sessions with few negative opinions. Further research is needed on a larger sample of students from different years of study in different subjects for better evaluation of this relatively new teaching method.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

REFERENCES

1. Rathnakar UP, Sheetal DU, Preethi GP, Rojeshwari S, Pemminati S, Shiraprakash G, et al. Is small group teaching among the undergraduate dental students really effective. *JCDR*. 2011;5(4):822-5.
2. Al-Kazemi AFR. Effective method of teaching psychiatry to undergraduate medical students: The student perspective. *Med Principles Pract*. 2000;9:255-9.
3. Bakhtiyar NH, Norouzi R. *New educational methods in the third millennium*. Ghom: Sama; 2003.
4. Euliano TY. Small group teaching: clinical correlation with a human patient simulator. *Adv Physiol Educ*. 2001;25:36-43.
5. Davis AW. Successful small group teaching. *Adv Psychiatr Treat*. 1999;5:376-81.
6. Walton H. Small group methods in medical teaching. *Med Educ*. 1997;31:459-64.
7. Aziz N, Nasir R, Salam A. Students' perception of small group teaching: A cross sectional study. *MEJFM* 2008;6(3):37-40.

8. Rathnakar UP, Gopalakrishna HN, Pai PG, Ullal SD, Pemminati S, Pai MRS et al. Didactic lecture and interactive sessions in small groups: A comparative study among undergraduate students of pharmacology in India. *JCDR*. 2010;l(4):2260-4.
9. Shatzer JH. Instructional methods. *Acad Med*. 1998;73(9):538-45.
10. Richards LJ, Wall SN. Iraqi medical education under the intellectual embargo. *Lancet*. 2000;355(9209):1093-4.
11. AL-Dabbagh S, Al-Tae W. Evaluation of task-based community oriented teaching model in family medicine for undergraduate medical students in Iraq. *BMC Medical Education*. 2005;5:31.
12. Harris AD, Mcgregor JC, Perencevich EN, Furuno JP, Zhu J, Peterson D, et al. The use and interpretation of quasi-experimental studies in medical informatics. *J Am Med Inform Assoc*. 2006;13:16-23.
13. Smee S. Skill based assessment. *BMJ* 2003;326(7391):703-6.
14. Doucet MD, Purdy RA, Kaufman DM, Langille DB. Comparism of problem-based learning and lecture format in continuing medical education on headache diagnosis and management. *Med Educ*. 1998;32:590-6.
15. Antepohl W, Herzig S. Problem-based learning versus lecture –based learning in a course of basic pharmacology: a controlled randomized study. *Med Educ*. 1999;33:106-13.
16. Tiwari A, Lai P, So M, Yuen K. A comparison of the effects of problem-based learning and lecturing on the development of Students' critical thinking. *Med Educ*. 2006;40:547-54.
17. Goshtasebi A, Zarifi A, Tarami B, Ghorbani A. Small group teaching in epidemiology courses. *J Med Edu*. 2006;9(1):11-15.
18. Lohse B, Nitzke S, Ney DM. Introducing a problem-based unit into a lifespan nutrition class using a randomized design produces equivocal outcomes. *J Am Diet Assoc*. 2003;103(8):1020-25.
19. Goodyear HM. Problem based learning in a junior doctor teaching programme. *Arch Dis Child*. 2005;90:275-8.
20. Costa ML, Rensburg L, Rushton N. Does teaching style matter? A randomised trial of group discussion versus lectures in orthopaedic undergraduate teaching. *Med Educ*. 2007;41(2):214-7.
21. Khan H, Taqui AM, Khawaja MR, Fatmi Z. Problem-based versus conventional curricula: Influence on knowledge and attitudes of medical students towards health research. *Plos one*. 2007;2(7):e632.
22. Jong ZD, Nies JA, Peters SW, Vink S, Dekker FW, Scherpbier A. Interactive seminars or small group tutorials in preclinical medical education: results of a randomized controlled trial. *BMC Medical Education*. 2010;10:79.
23. Nandi PL, Chan JNF, Chan CPK, Chan P, Chan LPK. Problem-based learning and conventional teaching. *HKMJ* 2000;6(3):301-6.
24. Khoo HE. Implementation of problem-based learning in asian medical schools and students' perceptions of their experience. *Med Educ*. 2003;37:401-9.
25. Huang R. Chinese International Students' perceptions of the problem-based learning experience. *JoHLSTE*. 2005;4(2):36-43.
26. Barman A, Jaafar R, Naing. Perception of students about the problem-based learning sessions conducted for medical and dental schools' students of University Sains Malaysia. *Educ Health*. 2006;19(3):363-8.
27. Botelho MG, O'Donell D. Assessment of the use of problem –oriented, small group discussion for learning of a fixed prosthodontic, simulation laboratory course. *Br Dent J*. 2001;191(11):630-6.

28. Ghosh S. Combination of didactic lectures and case-oriented problem-solving tutorials toward better learning: perceptions of students from a conventional medical curriculum. *Adv Physiol Educ.* 2007;31(2):193-7.

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