

Student perceptions and learning outcome on a “fishbowl” strategy-based pharmacology seminar on drug dependence

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Received: 09 March 2016

Accepted: 15 April 2016

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ABSTRACT

Background: In traditional seminars usually the participants (speakers) study a topic and the non-speakers remain passive. The present study was done by using a novel “fishbowl” strategy for conducting a pharmacology seminar.

Methods: A novel method based on “fishbowl” principle was applied to a drug dependence seminar in pharmacology, wherein every student was actively involved in the process. Learning outcome was assessed by comparing pre-test and post-test scores. Perceptions of students were assessed by a comprehensive questionnaire inquiring about the novel “fishbowl” method as well as seminars in general as a teaching-learning tool.

Results: The novel, “fishbowl” method showed a better learning outcome on a paired t test ($p < 0.0001$) as well as positive student perceptions. The students preferred seminars rather than lectures; however, they felt that traditional seminars are beneficial only to the speakers, and that in general seminar was a difficult and time consuming task. Majority of students expressed that the seminars were useful in preparing for medical examinations, and that seminar may be a part of evaluation in MBBS examination system.

Conclusions: Use of the “fishbowl” technique produced better learning outcome through a pharmacology seminar on drug dependence. The newly designed method did involve each participant in the class, facilitated active learning, benefited to the speakers as well as non-speakers, and helped build the team spirit. “Fishbowl” principle highlights the importance of individual and small-group learning, and thus makes pharmacology learning more effective and interesting.

Keywords: Seminar, Fishbowl, Unconference, Non-speakers

INTRODUCTION

Seminars have been useful as learning tools in medical education. They are usually conducted by traditional methods in which the teacher/facilitator chooses or nominates the speakers/presenters and allots a subtopic to them. The teacher decides the speakers randomly or based on the oration ability or examination scores of students, and/or willingness of the student to be a speaker. This type of traditional method may not involve the whole class in preparation of the topic, because (unless decided so), it may not be mandatory for the non-speakers (students other than speakers) to study, read, and prepare the topic, and hence the non-speakers may remain

passive listeners, and may not benefit from the actual exercise of the seminar.¹

The present study was designed in the form of a pharmacology seminar on drug dependence by a novel and different method. It was organized as a group activity with active participation of every student in the class, and the speakers were chosen by applying the “fishbowl” principle.² “Fishbowl” is a way to support dialogue and facilitate active participation. “Fishbowl” method assigns task to every individual, and then from all the individuals chooses the representatives as the speakers or presenters. Therefore the presenters/speakers chosen by “fishbowl” technique are the true representatives of the group.

Fishbowl principle is commonly used in large group seminars, conferences, workshops, and un conferences.^{3,4}

The present seminar was taken up by a novel method to see how it is useful to sensitize and involve the whole class on the issue of drug dependence, to encourage everyone in the class to study and understand the topic, and to develop the team-spirit of working for a common academic objective. The study also aimed at estimating the objective improvement in learning outcome so that the application of novel method could be assessed. Efforts were also taken to formulate the method for recording the opinion of the students about traditional seminars as a teaching-learning tool and the student perceptions regarding effects of the novel method on learning.

METHODS

“Fishbowl” group-based method was used to plan and conduct the Pharmacology seminar on “drug dependence.”^{3,5} The II MBBS students (n=105) were explained about the study, and their consent was requested for participation. The students were free to refuse participation at any point in time. Guidelines for the actual speech (oral presentation) as well as for the preparation of a power point presentation were provided and explained to the whole class. Since one of the objectives was to assess the learning outcome of the activity, a pre-test and post-test was planned. A 10-item, 10-minute “true/false” statement-type pre-test was administered to all participants in the class to assess their knowledge on drug dependence. The seminar topic of “drug dependence” was divided into 7 subtopics: (1) introduction, general terminology, and definitions, (2) controlled substances, schedules, and General management of drug dependence, (3) alcohol, (4) central nervous system depressants other than alcohol such as benzodiazepines, barbiturates, opioids, general anaesthetics, and others, (5) nicotine and caffeine, (6) central nervous system stimulants and hallucinogens, and (7) marihuana, anabolic steroids, and other substances of abuse.

Distribution of students and the first round of preparation

The students were grouped into seven teams based on their roll numbers, each group comprising of fifteen individuals. Each group chose a team leader. Each leader was requested to hold a meeting of the group members and assign a subtopic (out of the seven subtopics for the seminar) to minimum of two members in their own team, including the team leader. Now these two members were encouraged to study together and prepare the subtopic. Thus each member of the group was assigned work and each individual group prepared the whole seminar. The team leaders were constantly advised to encourage their team members to work together for preparation of the topic. Preparation time was 3 weeks.

Choice of speakers and the second round of preparation

At the end of preparation time of 3 weeks, the team leader of each team conducted a team meeting, and applying the “fishbowl” principle, the team chose a speaker as a representative of their team, making a total of seven speakers. Thus the speakers chosen by “fishbowl” principle represented their team and the team members were involved in the choice of the speaker. Now these seven speakers were randomly assigned one subtopic each, thus making the seven subtopics of the drug dependence seminar. Preparation time of 1 week was allowed to the speakers to study and prepare their final presentation in the form of a PowerPoint. Guidelines for preparing a power point presentation were reiterated and explained to the speakers. The speakers were encouraged to take help from their team members during the second round of preparation. They were also encouraged to coordinate with other speakers to maintain the continuity, flow, and sequence of the subject matter of the seminar and to avoid repetitions.

Conduction of seminar

Seminar was conducted in which the seven speakers (each representing a team) spoke on one subtopic each. The time for individual presentation was 7 minutes plus 2 minutes of rebuttal (a question-answer session for each subtopic). If a particular speaker would not answer to a query, any member from his team was allowed to answer the query. Three independent judges assessed and marked the actual presentation with maximum of 60 marks divided into “content” (30 marks), “presentation skills” (15 marks), “quality of the PowerPoint presentation and its appropriate use during the actual talk” (10 marks), and “overall effect on audience and rebuttal” (5 marks). The seminar was followed by posttest, and recording of student perceptions.^{6,7} Certificates and prizes were awarded to the winners, speakers, and group leaders to appreciate their effort.

Recording of student perceptions

After the post-test, a validated 16-item questionnaire was administered to all students to record their perceptions on two issues: One, perceptions on the novel, “fishbowl” method of conducting seminar (used in the present study) compared with the traditional seminars, and two, perceptions in general about seminar as a teaching-learning method. The students were explained the academic and research purpose of recording the perceptions, way to record the responses, meaning of the questionnaire items, and importance of thoughtful and honest recording of self-perceptions.⁸ The questionnaire used a modified Likert-like forced-choice response scale of 1 to 4 (“strongly disagree”, “disagree”, “agree” or “strongly agree”) in the increasing order of agreeing by choosing one of the four options.^{9,10}

Data collection and analysis

The data was collected and recorded in Microsoft excel, and the learning outcome was interpreted with the application of paired t test on the graph-pad software by comparison of pre-test and post-test scores. Perceptions were extrapolated into the two major categories of “disagree” and “agree”, and the data was expressed as percentages to interpret the student perceptions.^{10,11}

RESULTS

Learning outcome

Out of the 105 students in the class, 101 actually attended the seminar. So the results were considered for 101 students with their respective pre-test and post-test scores (Table 1).

Table 1: Pharmacology seminar on drug dependence pre-test and post-test scores.

Scores	Pre-test	Post-test
Mean	60.1%	69.9%
SD	17.92	16.40
SEM	1.78	1.63
N	101	101

The average marks scored at the pre-test and post-test were 60.1% and 69.9% respectively, which on a paired t test yielded the two-tailed P value of less than 0.0001, so the difference between the pre-test and post-test scores was found to be statistically significant. Thus the “fishbowl” based seminar activity in the present study yielded a positive learning outcome.

Perceptions

- The novel, “fishbowl” method of seminar compared with traditional seminars

A set of questions tested the student perceptions on how the students compared the novel, “fishbowl” method used in the present study with the traditional seminars (Table 2).

Table 2: Student perceptions: novel, “fishbowl” method compared with traditional seminars.

Criterion	Agree (%)	Disagree (%)
Better learning	91.3	8.7
Benefits all	72	28
Curiosity/excitement is more	74.8	25.2
Encouraged exploring more sources than usual	95.1	14.6
Should be conducted more frequently	83.5	16.5
Created team spirit and interest in peers	82.5	17.5

As compared to the traditional seminar, the “fishbowl” method showed better outcome on all the 6 criteria of comparison as shown in the figure (Figure 1).

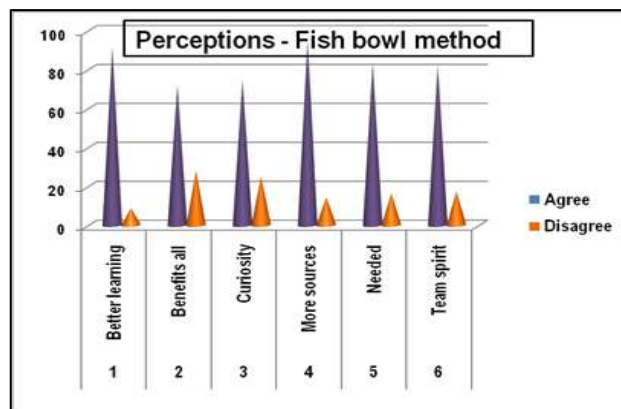


Figure 1: Student perceptions: better outcome on “fishbowl method”.

- Seminars; general opinion on seminar as a teaching-learning method

Table 3: Student perceptions: general opinion on seminar as a teaching-learning method.

Item	Agree (%)	Disagree (%)
Interested in public speaking	66	34
Seminar preparation not easy	89.3	10.7
Preparing is time spending	63.1	36.9
Only speakers benefit	57.3	42.7
Fear of being a speaker	68	32
Seminar better than lecture	56.3	43.7
Seminar limited role in learning	47.6	52.4
Improve communication skills	96.1	3.9
Should be part of MBBS exam	67	33
Useful for exams	81.6	18.4

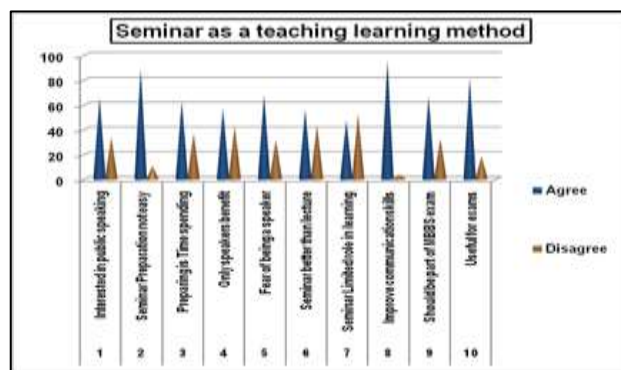


Figure 2: Student perceptions: seminar as a teaching-learning method.

Out of 101 students who attended this activity, 66% seemed to be interested in activities such as public speaking. As large as 89.3% students felt that seminar preparation is not an easy task and 63.1% felt that preparing for a seminar is a time-consuming task. Although 66% showed interest in public speaking, almost equal percentage of students (68%) expressed that when the seminar was announced, they had a fear that they would be picked up as a speaker for this seminar. In spite of this fear, almost the whole class (96.1%) agreed that in general the seminars are useful in improving the communication skills. Fifty seven percent of the students felt that usually only the speakers are benefited through a traditional seminar. While 47.6% students felt that seminar has a limited role in learning, a little more than half of the students (56.3%) preferred a seminar to a lecture. A large percentage of students (81.6%) expressed that seminars are useful tools while preparing for examinations, and 67% were in favour of making the seminars a part of MBBS examination (Table 3).

Thus the general opinion of the students on seminar as a teaching-learning method shows that they appreciated the ability of the seminars to be helpful to improve communication skills as well as to be useful for medical examinations. However, almost half of the students felt that the traditional seminars play a limited role as a whole in the learning process and that preparing for seminars is a difficult and time consuming task (Figure 2).

DISCUSSION

If the learning process remains passive, the learning outcome is known to be hampered. Various methods have been applied over years to break the monotony of didactic teaching and to in still active participation of students like tutorials, bedside clinics, group discussions, debates, and seminars have been tried over years to break the monotony.

In a typical traditional seminar, the topic and subtopics are announced, and an appeal is made to the students to volunteer their participation as a speaker. At many other times, a teacher chooses the speakers based on his/her judgment. A teacher usually looks for sincere, hardworking, academically top-ranking, interactive or studious persons with good oration qualities. However, the traditional seminars may not benefit all the students in the class. The first obvious reason is that only the speakers are assigned the responsibility to prepare the subtopic given to them and others are usually not assigned any direct responsibility. So the non-speakers (the students who are not chosen as speakers) may play a role of passive listeners. In such seminars, the audience may not study or prepare the topic and may not be involved in the content presented by the speakers. This is because the audience is neither assigned a task nor is offered a specific responsibility or role to play. Thus the traditional seminar may not serve the purpose of active learning of the subject matter by the whole class.¹

The present study was undertaken by designing a novel method to conduct a seminar, which would involve participation of all the students in the class, and the purpose was to evaluate the effect of the novel method on the learning outcome. The novel method was based on the idea of the “fishbowl” technique usually applied in workshop settings, large group discussions or unconferences.³ The “fishbowl” principle is based on distributing the participants in groups and assigning a task to each participant in the group. The participants individually contribute to the task with exchange of views from other members in the group, and complete the task as a team. Then a member is chosen from the group to actually present the task in front of the audience. Thus the speaker represents his/her team. “Fishbowl” principle allows freedom and opportunity to the participants to work in a team spirit, interact, make decisions, and choose the speaker from within them. Thus it involves active participation of each member.⁵

Learning outcome and student perceptions on the novel, “fishbowl” technique in a group-activity based seminar

Almost half of the students expressed their general enthusiasm in public speaking activities. Similarly almost half of students had a fear of being picked up as a speaker when the drug dependence seminar was formally announced. This was an expected and natural occurrence, because at that point in time the students were unaware of what was going to be the method of the present seminar, and they probably had in mind a traditional seminar, in which a teacher chooses the speakers. On the background of this fear-factor in traditional seminars, the novel-fishbowl method applied in the present study showed a positive learning outcome on post-test. Significant improvement in post-test scores was a reflection of active effort by the whole class in learning the topic of drug dependence.

Active participation of students in the whole process of the seminar kept a constant interest and involvement of all students over a period of 4 weeks. The evoked interest and enthusiasm lasted for a long time, probably due to the team spirit. Since each student was allotted a subtopic for preparation, each member from the group gained the capacity to help the other members. Since the speakers were not decided by the teachers, the element of curiosity was added to the task. In addition, each member of the group had an equal chance to be chosen as a speaker. So also, each member had equal authority and freedom to choose a representative-speaker for their team.

Some speakers got the same subtopic as they got during the first round of preparation; they now had an opportunity for improvisation. Some speakers got a new subtopic (which they had not prepared as a team member during the first round), and there were at least two members in their own team who had prepared the subtopic during the first round, and the speaker had an advantage of exchanging views and getting help from

those two team members. In addition, the speaker was benefitted by an opportunity to study a new subtopic during the second round of preparation. After the actual talk by each speaker, there was a 2 minute session of rebuttal (a question-answer session for each subtopic), during which if a particular speaker would not be able to answer to a query, any member from his team was free to answer. This method also facilitated the team spirit.

Almost whole class of the students felt that the novel method encouraged them to explore more sources of information and produced better learning. They also felt the group-activity based task created an element of interest in how their peers perform, and that such activity was needed to be undertaken more frequently. Almost three fourth of the students felt that the novel, “fishbowl” method of seminar kept them curious and enthusiastic through the whole learning period, and that it benefitted to all rather than being beneficial only to the speakers.

General opinion on seminars as a teaching-learning tool

Most of the students expressed their realization to the fact that seminar preparation is a time-taking and difficult task, and closer to half of the students felt that in general the seminars have a limited role within the whole sphere of education, and that through the traditional seminars usually only the speakers are benefitted. However, more than half of the students accepted the general utility of seminars as a teaching-learning tool, and they felt the seminars were better than lectures. Two-thirds of the students also felt that the seminars need to be a part of the assessment in medical examinations. Majority of the students felt that the seminars are useful to improve communication skills and are useful learning tools to prepare for medical examinations.

CONCLUSION

“Fish-bowl” technique applied in a design of a complexly interwoven structure of seminar is useful to improve learning outcome. “Fish-bowl” principle underscores the importance of active participation of every individual. Thus individual as well as small-group teaching forms the basis of managing large groups. Learning in small groups, teaching-learning each other, and exchanging views adds flavour to the process of learning.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Mutalik MM. Student perceptions and learning outcome on a “fishbowl” strategy-based pharmacology seminar on drug dependence. *Int J Basic Clin Pharmacol* 2016;5:879-83.