Int J Biol Med Res. 2024; 15(3): 7833-7836

Contents lists available at BioMedSciDirect Publications

International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Original article

Use of Self Directed Learning (SDL) to Foster Learning Among First Year MBBS Students

Dr Sana P Chowki*[1], Dr Parvez A Chowki[2], Dr Ramesh Patil[3]
[1]Assistant Professor, Department of physiology,
[2]Assistant Professor, Department of anatomy,
[3]Assistant Professor, Department of community medicine,
Ashwini Rural Medical College, Kumbhari, Solapur – 413006

ARTICLEINFO

Keywords:
Self Directed Learning (SDL)
physiology
blood
anaemia

ABSTRACT

Aim-To study the effectiveness of Self Directed Learning (SDL) among first year MBBS studentsMethod- First year MBBS undergraduate students (n=100)were selected as subjects for this study, their Lectures on Physiology of Blood were conducted andafter a gap of 1 week a test was conducted.(PRE-TEST) Then students were provided with Lecture handouts, some essential videos and specific learning objectives in order to prepare and come for SDL sessions being conducted after a gap of 1 week, SDL sessions were taken in small groups(Batch A -33 students, Batch B- 33students, Batch C- 34 students) and again after 1 week test was conducted.(POST-TEST). Feedback responses were obtained from students in the form of Feedback Questionnaire Results- The Mean score of Pre test is 11.94 while Mean Score of Post test is 12.43. Although Mean difference of 0.49 is obtained, however P value is 0.10 (which is greater than 0.05) hence difference between the two scores is NOT STATISTICALLY SIGNIFICANT. Conclusion-From Current study, it can be said that SDL is effective on the basis of satisfactory feedback responses obtained, Although test results did not give Significant outcome. Hence Combining both teaching learning methods (Lectures followed by SDL) did not foster the learning process in this study.

© Copyright 2023 BioMedSciDirect Publications IJBMR -ISSN: 0976:6685.

Introduction

In Bachelor of medicine and Bachelor of Surgery (MBBS) course in First year they are being introduced to three basic subjects Anatomy, Physiology and Biochemistry. Physiology has been considered to be challenging subject for medical students to comprehend,integrate and apply in clinical sciences. Many students face difficulty in understandingcore physiological concepts in the context of diseaseprocesses[1,2]. Hence here it becomes important for a Physiologist to make Lectures interesting and easy to understand, also facilitate students learning Process.

One Such method for facilitating learning among students is Self Directed Learning(SDL). SDL is widely beingused in medical as well as other healthcare professional coursesettings [3]. In the Indian context, literature for SDL at theundergraduate level are minimal.

The readiness for SDL depends onpersonal attributes as well as the curriculum followed in institutions[4]. Some researchers have emphasized the importance ofcontext in motivating students to become self-directed [4]. To pursue lifelong learning Medical students are expected to possess self-directed learning (SDL) skills.

Self Directed learning is included as a part of curriculum of First MBBS programme where dedicated 8 hours have been allocated to it. Also there are studies done in India mentioning SDL as an effective tool for active learning [5], while few studies which have shown that there was no significant improvement in learning process of students.

Corresponding Author:
Dr Sana P Chowki[1]
Assistant Professor, Department of physiology
Ashwini Rural Medical College, Kumbhari, Solapur – 413006
Email: sana.arif.shaikh@gmail.com

© Copyright 2023 BioMedSciDirect Publications IJBMR -ISSN: 0976:6685.

There are very less studies done in India over perceptions of students regarding SDL. Also Readiness towards SDL.

SDL has been advocated for effective and efficient training of medical students.[5] Numerous studies have proved SDL valuable in terms of knowledge acquisition for learning gross anatomy and physiology.[6,7]. Although a few studies suggest self-learning groups performed better than traditional large group lectures,[8-11] While some other studies have reported self study-group to be equivalent to traditional classroom teaching. [12-14]

The traditional Didactic lectures are also getting evolved into much interactive lectures for understanding core concepts of Physiological mechanisms[15].one of those techniques are case based discussions or providing lecture handouts or videos to the students for self preparation followed by discussions and assessment.

The times are changingand more emphasis has been placed now on thedevelopment of critical thinking skills in contrast toemphasis on the systems-based didactic lectures.[16]

Since when NMC has introduced competency-based medical education(CBME), it has led to a paradigm shift in the medical education system in India. More emphasis is being given to student-centered teaching–learning approaches. Self-directed learning sessions have become mandatory in each medical specialty in all phases of medical undergraduate training. Self-directed learning is a student-centered approach that helps medical students to inculcate the habit of reading on their own and to become lifelong learners. The latest graduate medical education regulations include lifelong learningas one of the goals of Indian medical graduates.

The currentstudy was designed to implement SDL sessions forphase 1 undergraduate medical students in physiology andto assess its effectiveness through students' perceptions.

AIM

To study the effectiveness of Self Directed Learning (SDL) among first year MBBS students

OBJECTIVE

1. To evaluate whether performance of students is better after SDL session followed by Traditional Lectures as compared to their performance after attending Lectures.
2. To Measure the Satisfaction Index from the feedback reflections of first year MBBS students regarding SDL.

METHOD

In the Bachelor of Medicine and Bachelor of Surgery (MBBS) programme, the curriculum includes didactic lectures, tutorials, and practical demonstration exercises. However now a days more emphasis is given on active learning strategies. One such medium for fostering Active learning among Medical students is to implement Self Directed Learning(SDL)

The study setting was at ARMCH, Kumbhari, solapur India, and the study sample included first-year undergraduate medical students (n _ 100).The study design was Interventional Analytical study Lectures were conducted for 1st year MBBS students on Blood Physiology as a part of their syllabus. A test was conducted after 1 week about which students were informed prior.

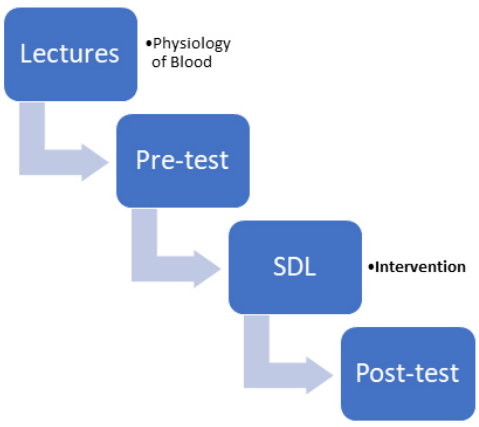
The test was conducted in the form of One liners.Questions were dictated to them and giving 1 minute time for writing their answers.10 Questions were designed in such a way that it would have precise and specific answers. And students should be able to finish writing within 1 min.

Questions were like - What is chemotaxis? What is Opsonization? Name granules in platelets. Enumerate stages of hemostasis. Name any 2 inherited disorders with abnormal Hemoglobin, etc, where each question carried 2 marks.

Intervention- Resource material in the form of Lecture handouts and videos was provided and peer discussions was allowed, also specific learning objectives of Blood Physiology were given to the students. and in the next 3 weeks SDL session was conducted in 3 small batches(Batch A -33 students, Batch B- 33students, Batch C- 34 students)

In SDL sessions,Three(3) topic from blood were discussed, 1st was Physiology of Anaemia and 2nd was Physiology of Coagulation and Coagulation Disorders and 3rd was Physiology of Immunity Post test was Conducted having same format questions with one liners.

Tests were conducted before and after SDL sessions in order to assess Quantitative outcome of test results. Study plan was as follows



After post test , Students were given feedback form where their reviews were obtained in the form of LIKERT SCALE as follows:
Where 1 is strongly disagree, 2 Disagree, 3 is Neutral, 4 is Agree and 5 is Strongly Agree.

Table 01: LIKERT SCALE

Feedback Questionare		Likert scale					
		1	2	3	4	5	
1	The sessions Helped me to improve my learning skills						
2	I got aware of my strengths in learning						
3	In depth learning						
4	Pre test session motivated me to study more effectively						
5	Understood topic better &Increased analytical ability						
6	Helped to find my weakness while learning						
7	Specific learning objectives were useful						
8	I feel better prepared to study on my own						
9	Engaged in Collaborative learning						
10	Want more such sessions						

After Post test, answers of those questions were discussed with students and queries were solved.
Pre test and post test scores were analysed by Wilcoxon Test by using statistical software's.
And scores of students from Feedback Questionnaire were analysed.

RESULTS

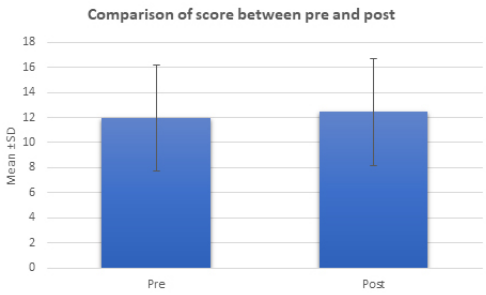
The Mean score of Pre test is 11.94 while Mean Score of Post test is 12.43. Although Mean difference of 0.49 is obtained, however P value is 0.10 (which is greater than 0.05) hence difference between the two scores is NOT STATISTICALLY SIGNIFICANT.

Although personal scores of some students were better in post test than pre test , But overall assessment showed that there is no statistically significant improvement among students after SDL session.

Table 02: Comparison of score between pre and post

	Mean	SD	Mean difference	95% CI of difference	z-value	p-value
Pre	11.94	4.24	0.49	-0.06 – 1.05	1.65	0.10
Post	12.43	4.29				

Wilcoxon test applied
Graph 1 : Comparison between Pre test and Post test scores



Above Graph shows that scores in Pretest and Post test are at same value around 12
Hence that shows Performance of students after SDL added on Lecture (Post test) was not enhanced as compared to performance of students after Didactic Lecture alone (Pre test)
Result obtained in current study is neutral regarding effectiveness of SELF DIRECTED LEARNING (SDL)
Reasons could be- less sample size, Students did not make use of research material provided and lacked in self study.
However the feedback response obtained for students show a positive response in which 55 students agree SDL sessions helped them to improve their learning skills and 17 students strongly agree. while the 49 students agree that SDL sessions helped them to know strengths while learning & 40 students strongly agree this.
Perceptions recorded from majority of Students was in favour od SDL and some felt it was not useful in analytical learning.
Following is table which shows number of students response for Feedback Questionnaire.

Sr NO	Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
1	The sessions Helped me to improve my learning skills	1	2	25	55	17	100
2	I got aware of my strengths in learning	1	_	10	49	40	100
3	In depth learning	6	5	42	37	10	100
4	Pre test session motivated me to study more effectively	1	12	20	46	21	100
5	Understood topic better &Increased analytical ability	1	5	23	36	35	100
6	Helped to find my weakness while learning	2	_	14	51	33	100
7	Specific learning objectives were useful	1	1	31	52	15	100
8	I feel better prepared to study on my own	2	11	34	35	18	100
9	Engaged in Collaborative learning	3	15	47	27	8	100
10	Want more such sessions	6	14	42	19	19	100

For evaluation of student responses and perceptions , Satisfaction index was calculated for each question
Formula used for calculating Satisfaction Index is stated below [17]:

$$SI = \frac{\{(a X1)+ (b X2)+ (c X 4)+ (d X 5)\} X 20}{N}$$

Where, SI is Satisfaction Index
a,b,c,d are number of total responses for the Co-efficient 1, 2, 4 and 5
Coefficient 1- Strongly disagree
Coefficient 2- Disagree
Coefficient 4- Agree
Coefficient 5- Strongly Agree

N= number of total participants
The internationally accepted norm for an unsatisfactory outcome is a satisfaction index of less than 60%

The Feedback Questionnaire for which we have got satisfaction index more than 60% are as follows

The sessions Helped me to improve my learning skills
I got aware of my strengths in learning
Pre test session motivated me to study more effectively
Understood topic better &Increased analytical ability
Helped to find my weakness while learning

Total responses in terms of satisfaction index are as follows:
Graph 2 : Satisfaction index



DISCUSSION

It is very essential to providean opportunity for phase 1 medical students to developskills essential for lifelong learning, I instead of becoming a passive learner by just listening to the lectures, the should learn how to study and understand topic better and implement in their lifelong run.

Hence we decided to conduct SDL sessions and sensitize students about it. In current study we provided students(n=100) the lecture handouts and few videos regarding topic blood physiology , Also specific learning objectives were given to the students and SDL sessions were heldand post test were taken with prior information to students. Quantitative analysis in the form Pretest and Post test did not give statistically significant results, However Qualitative Analysis in the form of Feedback Questionniarewas taken from students. Reflections from students showed that SDL sessions are helpful to some extent. Many students thought that specific learning objectives were useful and they feel better prepared to study on their own. Also many students thought SDL sessions helped them to improve their learning skills. However they were not sure whether they want moresuch SDL sessions. That means readiness for SDL is low at this stage in this Phase 1 mbbs students.

Somestudents thought that SDL sessions didn't really help them, especially in analytical learning and in depth learning of the topic.

A study done by Bharti Bhandari et al study 'Implementation of Self-Directed Learning in Physiology for Phase 1 Undergraduate Medical Students' following observations were made- A total of 96 phase 1 students participated in the study. In this study self study was followed by discussion was carried out. Reflections about learning process was obtained from students a majority of the students felt that after SDL sessions, they were more prepared and aware of their learning strengths and had started taking ownership of their learning. However, some students felt that the activity was not useful in improving their analytical skills. [18]

Similar study by Abraham RR et al Modified directed self-learning sessions in physiology with prereading assignments and Pecha Kucha talks: perceptions of students Has given following observations-

This study reports perceptions of first-year undergraduate medical students (n _ 120), regarding modified directed self-learning (DSL) sessions in physiology. Students were provided with prereading assignments pertaining to the topic 1 week before the scheduled small-group DSL presentations. Frequency analysis of the responses revealed that_60% of students were positive about the modified DSL sessions improving their DSL, presentation, collaborative learning, and information retrieving skills, but their perceptions on satisfaction and usefulness of the same toward achievement of various skills was not encouraging.[19]

Another study done by Kirtana Pai and et al "The effectiveness of self directed learning for teaching Physiology to first year medical students". In this study, two batches of first-year MBBS students (Batch A and Batch B) were made, Batch A received an SDL session on Morphological classification of anaemia. The students belonging to Batch A received a one-hour lecture on the same topic three days prior to the SDL session. The students were given a 10 multiple choice questions (MCQ) test for a maximum of 10 marks immediately following the SDL session.

The next topic, Conducting system of the heart, disorders and conduction blocks was taught to both batches in traditional lecture format. This was followed by an SDL session on the same topic for Batch A only.
The mean test scores on the first topic were 4.38±2.06 (n=119) and 4.17±1.71 (n=118) for Batch A and Batch B, respectively. The mean test scores on the second topic were 5.4± 1.54 (n=112) and 5.15±1.37 (n=107) for Batch A and Batch B, respectively. There was no significant difference between the groups. To conclude:
For first-year medical students, SDL is an effective teaching strategy for learning physiology. However, no additional benefit is gained by supplementing SDL with a lecture to facilitate learning physiology.[20]

One more study which I came across was "Physiological curiosity of the week": a teaching tool to facilitate self-directed learning and student participation during a cardiovascular physiology course" byRonan M. G. Berg from Denmark. Here the Author would teach didactic lectures to MBBS students as per schedule. And at the end of topic after 1 or 2 week, Author would introduce what he called a "physiological curiosity" to the students. This curiosity differed from the typical case studies used in our faculty in that rather than presenting some complex clinical case story, it encompassed only some very simple physiological data and a clear question for example : a 30-s recording of continuous invasive blood pressure and respiratory rate from a healthy subject used to be given to the students with the question: "How does normal breathing affect blood pressure?" In the following lesson, we discussed how intrathoracic pressure affects cardiac preload, how this relationship is affected by mechanical ventilation and the pathophysiology of pulsus paradoxus. The physiological curiosity of the week thus seemed to be successful for enhancing self-directed learning, and student involvement increased notably with enhanced and student-teacher interactions.[21]

Conclusion

Self Directed Learning is effective Teaching learning strategy. However its implementation is challenging as it is a student centred learning with faculty as a facilitators. Only Those students who read the topic and make use of recources find it useful. Remaining students do not participate actively. As there are some students who learn the topics only when Exams are on their head.

From Current study, it can be said that SDL is effective on the basis of satisfactory feedback responses obtained, Although test results did not give Significant outcome. Hence Combining both teaching learning methods (Lectures followed by SDL) did not foster the learning process in this study.

Limitations

• One Reason for insignificant test results of students could be , Not all students made use of resources provided to them, also all students did not participate actively during discussions in SDL sessions.

• Another Reason is there were some students who came unprepared, became just passive listeners. But again to become self directed in the very first year is Challenging for students, requires high level of motivation from their part, where teachers mustfacilitate the acquisition of skills required for SDL.
• The study data is from one institute only , hence cannot be generalized.

Conflicts of interest: NIL
Funding source: Nil

REFERENCES

[1] Michael J. What makes physiology hard for students to learn? Results of a faculty survey. Adv Physiol Educ. 2007;31(1):34-40. doi: 10.1152/advan.00057.2006

[2] Michael J. Where›s the evidence that active learning works? Adv Physiol Educ. 2006;30(4):159-167. doi: 10.1152/ advan.00053.2006

[3] Murad MH, Coto-Yglesias F, Varkey P, Prokop LJ, Murad AL. The effectiveness of self-directed learning in health professions education: a systematic review. Med Educ44: 1057–1068, 2010.

[4] Greveson GC, Spencer JA. Self-directed learning-the importance of concepts and contexts. Med Educ39: 348–349, 2005.

[5] Implementation of Self-Directed Learning in Physiology for Phase 1 Undergraduate Medical Students Bharti Bhandari1 · Prerna Agarwal1 · Deepti Chopra1 · Aprajita Panwar1 · Daljit Kaur2 · Tanvir K. Sidhu3

[6] Arroyo-Jimenez Mdel M, Marcos P, Martinez-Marcos A, Artacho-Pérula E, Blaizot X, Muñoz M, et al. Gross anatomy dissections and self-directed learning in medicine. Clin Anat 2005;18:385–91. doi: 10.1002/ca.20129.

[7] Grieve C. Knowledge increment assessed for three methodologies of teaching physiology. Med Teach 1992;14:27–32. doi: 10.3109/01421599209044011.

[8] Considine J, Botti M, Thomas S. Effect of a self-directed learning package on emergency nurses' knowledge of assessment of oxygenation and use of supplemental oxygen. Nurs Health Sci 2005;7:199–208. doi: 9.1111/j.1442-2018.2005.00236.x.

[9] Taylor EJ, Mamier I, Bahjri K, Anton T, Petersen F. Efficacy of a self-study programme to teach spiritual care. J Clin Nurs2009;18:1131–40. doi: 10.1111/j.1365-2702.2008.02526.x.

[10]Lake DA. Student performance and perceptions of a lecture-based course compared with the same course utilizing group discussion. Phys Ther 2001;81:896–902.

[11]Abraham RR, Upadhya S, Ramnarayan K. Self-directed learning. Adv PhysiolEduc2005;29:135–6. doi: 10.1152/advan.00008.2005.

[12]Peng WW. Self-directed learning: a matched control trial. Teach Learn Med 1989;1:78–81. doi:10.1080/10401338909539385.

[13]Abraham GJ, Dhume VG, Diniz RS. Comparison of didactic lecture, self-reading and self-instruction as learning methods in medical students of western India. Med Educ1981;15:222–5. doi: 10.1111/j.1365-2923.1981.tb02636.x.

[14]Haidet P, Richards BF, Morgan RO, Wristers K, Moran BJ. A controlled trial of active versus passive learning strategies in a large group setting. Adv Health Sci Educ2003;9:1527. doi:10.1023/B:AHSE.0000012213.62043.45

[15]A way forward for teaching and learning of Physiology: Students' perception of the effectiveness of teaching methodologies Rabiya Rehan1, Khalid Ahmed2, Hira Khan3, Rehana Rehman4

[16]Huang GC, Lindell D, Jaffe LE, Sullivan AM. A multi-site study of strategies to teach critical thinking: 'why do you think that?' Med Educ. 2016;50(2):236-249. doi: 10.1111/medu.12937

[17]Determination of Satisfaction Index as a tool in evaluation of CME ProgramKuldeep Singh1, Baldev Sharma1, Sanjeev Misra2, J S Bajaj3 Department of Pediatrics1, Director2, All India Institute of Medical Sciences, Jodhpur Professor Emeritus, National Academy of Medical Sciences, New Delhi3 Ann Natl Acad Med Sci (India), 49(3&4): 185-193, 2013

[18]Bharti Bhandari et al study 'Implementation of Self-Directed Learning in Physiology for Phase 1 Undergraduate Medical Students'

[19]Abraham RR, Torke S, Gonsalves J, Narayanan SN, Kamath MG, Prakash J, Rai KS. Modified directed self-learning sessions in physiology with prereading assignments and Pecha Kucha talks: perceptions of students.

[20]Kirtana Pai and et al study "The effectiveness of self directed learning for teaching Physiology to first year medical students"

[21]Ronan M. G. Berg from Denmark published a study "Physiological curiosity of the week": a teaching tool to facilitate self-directed learning and student participation during a cardiovascular physiology course"

© Copyright 2023 BioMedSciDirect Publications IJBMR -ISSN: 0976:6685.