

TEACHING ANATOMY BY USING KOLLAR METHOD AS AN AI TOOL FOR LOW ACHIEVERS IN 1ST YEAR MBBS STUDENTS

Dr. Krishnaveni. C¹, Dr. Naga Vidya Lakshmi.K², Dr.Mehandi. V. Mahajan³, Dr. Venkateshu.K. V⁴

¹Associate Professor, Department of Anatomy, IMCH, Pandur, Tiruvallur, Tamilnadu-631203, Orcid Id: 0000-0003-1445-3046, Ph no: +91-9063461213, Email: krishna14v@hotmail.com

²Assistant professor, Department of Anatomy, Government Medical College, Guntur, kannavidya.bds@gmail.com

³Professor & HoD, Department of Anatomy, IMCH, Pandur, Tiruvallur, Tamilnadu-631203, mm1710@gmail.com

⁴Professor, Department of Anatomy, SDUMC, SDUAHER, Kolar, Karnataka-563101, venkkodi1991@gmail.com

ABSTRACT

Introduction: This is an acronym, namely KO is for Keys of Originality, L is for Learning, L is for Lecturing, A is for Application of social media and R is for Relaxation. This element of the method helps the teacher focusing on improving the creative skills of the students by applying creative techniques such as divergent thinking, problem solving. The aim of the study is to introduce the KOLLAR method for 1st year MBBS by creating interest in slow learners for their improvement and performance in anatomy.

Materials & Methods: The study was performed for 4 years on slow performers/learners in 1st year MBBS students in Department of Anatomy, actively participated in this study after getting ethical approval by the Institutional ethical clearance. After 1st internal assessment the slow learners are identified given assignments (questions) to practice the diagrams. On the same topics they have to prepare by using "KOLLAR method", later students will do the activity by using their systems/laptops/mobiles any software also they can use and draw a diagram on that topic and save it. KO-they are using normal traditional method by attending regular classes, L-they are learning by dissection methods, drawing diagrams L- normal lecturer classes they will attend and do assignments, A-in initially by using electronic devices and software they will be application of social media. R- it is a playful method. At the end feedbacks will be collected from the students. This study was done only in Hungary nowhere else. Present study is different from Hungarian study by performing on slow learners/low achievers with different methodology adopted by following the concept.

Results: By using feedback analysis in Likert's scale the study was analyzed. The low achievers mentioned that this is useful method in understanding the subjects. So, it is effective in improvising the skills of the slow learners and create interest in the subject and make them successful.

Conclusion: By listening the theory classes and performing by this KOLLAR method is better in understanding. Blending of traditional and KOLLAR method it is useful.

KEYWORDS: Medical education, KOLLAR method, Student teacher-centric learning, Anatomy teaching, Low achievers.

1. INTRODUCTION

Anatomy remains the foundation of medical education, and there is a growing opportunity to strengthen its standards and restore the depth of conceptual understanding. The standards of anatomy and understanding the subject concept now a days renewed attention today. This existing restrictions for anatomical education, affects the value of anatomy training which has been critically scrutinize or dissect. These may be a reason for establishing competition between traditional methods and innovative methods. They are adapting only improving the skills without having complete concept on the subject. In this regard they were different methods have been adopted in teaching- learning by using artificial intelligence which became fundamental and not a choice. So, in a smaller amount of utilization of these skills would burden on expertization. The new adaptations include e-learning, on-line or web-based learning and problem-solving-based learning has been adopted in teaching skills. The revolution started from student, teacher-centered to an integrated core curriculum to develop innovative methods like skill labs and imitation techniques, Early Clinical Exposure, Self-Directed Learning.¹ So instead of student, teacher-centered it should be student self-directed learning techniques have to be encouraged. The educational organizations maintain "replication" instead of "creation". Moreover, anatomists experience the burden of the altering methods in medical education and evaluation, with restricted resources to teach particularly varied set of undergraduates with diverse in earlier precise educational qualifications, knowledge and skills. Learning anatomy with cadaveric dissection has become imaginary in most of medical schools due to scarcity in the number of cadavers compared to the increasing student strength, and the excessive content in the anatomy curriculum. Medical schools must give significance on assessment implements which destined not to evoke only memory, but to develop desired capabilities for upcoming professional life.² Academic fulfilment in basic sciences is crucial in the medical course training. Based on the basic science knowledge by integrating with clinical subject's medical students are supposed to apply and implement their knowledge during clinical practice. So based on the assessment we are deciding the slow/low achievers and high achievers.³ The poor presentation skills in assessments often effects their skills indicates underlying deficiencies in cognitive ability, communication skills, or professionalism.⁴ Slow learners/low achievers means learners who was unsuccessful in assessment or had to give more attempts to clear the exam. ⁵

In this view for low achievers there should be a method to create interest in them, in that way this KOLLAR method had been introduced. This is an acronym, namely KO is for Keys of Originality, L is for Learning, L is for Lecturing, A is for Application of social media and R is for Relaxation. This method helps the teacher to focus on improving the creative skills of the students by applying creative techniques in a different way of thinking and develop problem solving techniques.⁶ The aim of the study is to introduce the KOLLAR method for 1st year MBBS low achievers by creating interest in the improvement and performance in anatomy.

MATERIALS AND METHODS:

Study Design: A prospective study

Study Participants: The KOLLAR method was performed on 1st year MBBS students who are low achievers in Department of Anatomy, Sri Devaraj Urs Medical College, after obtaining approval from Institutional ethical clearance with no: DMC/KLR/IEC/99/2016-17.

Criteria meant for low achievers:

This study was performed specifically on low achievers based on their internal marks. The students who scored below 35% in theory and in the practicals were considered as low achievers. From 1st, 2nd and 3rd internal assessments those who scored according to above criteria those students only were considered. The study was conducted for 4 batches 2015-2016, 2016-2017, 2017-2018, 2018-2019 with 229 participants. From 2015-2016 batch, 75 students were enrolled and at last 54 were volunteered to continue in this study remaining 21 students (28%) were dropped out. From 2016 -2017 batch 84 students were enrolled and 62 students were participated remaining 22 (26%) students were dropped out from the study. From 2017-2018 batch, 78 students were enrolled and 45 students only attended. From 2018-2019 batch a total of 80 students were participated and 68 students were continued in the study.

Exclusion and inclusion criteria: Students who attempted only one internal assessment were excluded from the analysis. Attrition among the participants was attributed to several factors, including lack of interest, reduced motivation, involvement in other activities, irregular attendance, frequent absence from morning sessions, and inadequate sleep resulting from late-night completion of record work. So, 88 out of 229 participants (38.4%) were all excluded. By studying this KOLLAR method students who had attempted in 2 internal assessments were only included in the study.

METHODOLOGY:

Selection of low achievers: The selection of low achievers was based on their internal assessments marks that who have scored less than 35% of marks in theory. As a part of their curriculum these students had attended as usual for lectures and dissection. For these students every week a topic was given from that week lecture in which already the topics was finished in lecturer and as well as in dissection, from those topics only the task was selected. Eg: in lower limb femoral triangle was the topic. They have to draw the diagrams for boundaries and contents by using the paint option or from any digital gadget softwares they can use and draw only the diagrams. These diagrams should be self-explanatory and after that they have to prepare the power points also. After that the same topic was given for discussion in small groups (in each group 5 students were there). So, students suggested they want to discuss before the task was done not after. So, by end of the week, they will show the task to the mentees or moderators for validation and rectification. While they are drawing the diagrams they can keep the standard books with them for reference and draw. Like this in lower limb few topics and in abdomen, Head & neck the topics were divided and given to the students and they performed well in their internals and scored well. But initially they felt difficult, hectic and got scared but after 2 to 4 tasks they were interested in learning and improved their skills, creativity. The KOLLAR method is defined as KO for Keys of Originality, L for Learning, L for Lecturing, A for Application of social media and R is for Relaxation. ⁶

Method Applied: KO- Keys of Originality when we asked them to draw the diagrams by using some software or any tool like paint option etc. In that creativity is there by enhancing in drawing diagrams by utilizing the computer skills and in understanding the concept of subject. At the same time they will L- learn and built-up concept in the subject and start their own line diagrams and some students they are phrasing their own dictums to remember the subject and also helps in A- application of social media also. By fun they were learning the subject so it is not at all a stress barrier it will give R- relaxation also. Participants were encouraged to exchange their work with one another for correction, enabling them to learn from their errors and make the necessary improvements. Then it is fun and come with healthy competitive skills. Other L-Lecturing they will discuss the task before and after on the topic so it helps them to develop and leave fear to discuss the topic. At last, we compared their marks to previous internal marks by improvement in their internal marks. Then feedback was collected from the participants.

Feedback Questionnaire: By preparing a feedback questionnaire, the qualitative analysis was done. In feedback forms total 15 questions have been given, in that total 13 were closed type. The remaining 2 questions were open type. Data was interpreted on excel sheet Microsoft 2007 version. These responses were analyzed by grading them on a five-point Likert's scale.

RESULTS

From questionnaire the analysis was out of 159 participants 150 responded for KOLLAR method is helpful and 85 % expressed it is useful, out of 148-126 responded positively by this method understanding the subject in a better way. The detail of this analysis was tabulated in below table no.1. In 2 open ended questions the opinions were as follows: 94% of students expressed that cadaveric dissection cannot be replaced by any type of methods. The KOLLAR method needs more time initially, after practicing for 3 to 4 times it can be easily adopted. But in understanding the subject in a better way, to recollect, analyzing skills were nice but only after discussion it has improved. They suggested some software for video

lecturing especially in embryology as to provide for free of cost. Many students suggested you tube lectures find interesting and they want blending of both traditional way of teaching and this KOLLAR method to apply.

Table.1: Questionnaire analysis

Q.No	Questions	Total R (229)	SA & A- R	% SA&A	N/n - R	% N/n	SD& D-R	% SD& D
1	Adopting KOLLAR method is useful	229	112	80	15	10	7	5
2	Adopting KOLLAR method is not useful	229	4	3	18	12	110	82
3	Adopting KOLLAR method embellish the subject knowledge, competency skills	220	106	80	17	12	3	2
4	Previously had knowledge about this method	220	0	0	14	10	106	90
5	Previously had computer knowledge for softwares to draw diagrams	222	12	15	50	36	64	45
6	Discussion in small groups were effective	226	65	35	16	10	65	35
7	Discussion in large groups were effective	224	36	30	31	20	67	40
8	Teaching by traditional way is best	229	59	30	31	20	59	30
9	By listening to music, watching movies or cartoons etc stress will be reduced	221	55	35	15	10	66	40
10	Sleeping for more hours I feel relaxed	224	36	25	16	10	82	55
11	By chatting with near and dear people I feel stress relieved	223	33	30	33	30	57	40
12	By practicing yoga, meditation, or by physical exercise I feel stress relieved	229	39	30	51	40	39	30
13	I do not feel any stress at all by using this method	222	89	55	40	25	8	5

SA –Strongly Agree, A- Agree, N/n-Neither /nor, SD- Strongly Disagree, D-disagree, %-Percentage
R-Responses

DISCUSSION:

Many studies were focused on teaching, learning strategies in undergraduate medical students but hardly few studies were done on low/slow achievers.⁷ They may be many reasons for the low achievements in academics like lack of interest in subject, not well oriented, study environment, positive thinking and their attitude.⁸ Based on scoring we are estimating them as low achievers but their skill wise, way of thinking, analyzing is completely different from high achievers and very

creative. Due to selective study, laziness to study complete portions are few reasons to be low in academics. In a study executed by Tam clarified that Computer Assisted Learning package gave the most benefit to students with lower achievers than high achievers which is matching to our study but difference in methodology.⁹ A study piloted by Bose et al., stated that small group discussion is helpful in improving the presentation skills and analysing the subject especially for slow learners which matches with present study.¹⁰ A study performed by Mandal et al., expressed that sensitive and psychological emotions affects the scholastic performance and achievements.¹¹ In a study on different teaching methods in anatomy was reviewed by Chan, mentioned that the best way was lecturing at the commencement, by means of self-study and at the end teaching by dissected specimens. So the main concept of teaching anatomy now a days is, “how efficient the teacher in e-learning is not important thing, how efficient of utilizing technology in teaching and delivering to students effectively have to give weightage.”¹²

Limitations of the Study:

The exact reasons for drop off students from the study are unknown.

In this study only low achievers were selected but not for active learners.

As it is not a part of course work so students felt to spend extra time and also burdened some

CONCLUSION:

As each student is different in their perspectives in understanding the skills and their interests, so different methods are required and by using blending of methods it will be helpful especially for low achievers.

Authors Declaration:

No conflict of interest.

REFERENCES

1. Aruna V. Teaching - Learning Methods in Medical Education Merits and Demerits-Review. *International Journal of Research and Review*. 2019;6(8):2349-9788;
2. Singh K, Bharatha A, Bidyadhar SA, Adams OP, Md. Majumder AA .Teaching anatomy using an active and engaging learning strategy. *BMC Medical Education*.2019; 19:149 1-8.
3. Sitticharoon C, Srisuma S, Kanaviton S, and Summachiwakij S. Exploratory study of factors related to educational scores of first preclinical year medical students. *Adv Physiol Educ* 38: 25–33, 2014; doi:10.1152/advan.00162.2012. PMID: 24585466.
4. Hauer KE, Teherani A, Kerr KM, O'Sullivan PS, Irby DM. Student performance problems in medical school clinical skills assessments. *Acad Med*. 2007; 82(10):S69-72.
5. Pinyopornpanish M, Sribanditmongkok P, Boonyanaruthee V, Chan-ob T, Maneetorn N. Factors affecting low academic achievement of medical students in the faculty of medicine, Chiang Mai University. *Chiang Mai Med Bull*. 2004; 43(1): 15-23.
6. Kollar J, Babusa B, Stauder A, Pilling J, Cserepes R, Czeglédi E. Improving teaching efficiency on medical universities – A comparative study of Hungarian and foreign medical university students’ feedbacks regarding learning by KOLLAR method. *J Contemp Med Edu*.2016; 4(1):1-7.
7. Tam M.D.B.S, Hart A.R, Williams S, Heylings D & Leinster S. Is learning anatomy facilitated by computer-aided learning? A review of the literature. *Medical Teacher*. 2009; 31:9. e393-e396. DOI: 10.1080/01421590802650092
8. Sharma P, Singh P, Kalhan S, Garg S. Analysis of Factors Affecting Academic Performance of MBBS Students in Pathology. *Ann. Int. Med. Den. Res*. 2017; 3(5):PT09-PT15.
9. Mayya S, Roff S. Students’ Perceptions of Educational Environment: A Comparison of Academic Achievers and Under-Achievers at Kasturba Medical College, India *Education for Health*. 2004; 17(3): 280 – 291.
10. Bose A, Jehan M. impact of “group discussion” as a teaching-learning method on performance of poor performers in the subject of anatomy, *international journal of scientific research*. 2018;7(3):599-600.
11. Mandal A, Ghosh A, Sengupta G, Bera T, Das N, Mukherjee S. Factors affecting the performance of undergraduate medical students: A perspective. *Indian J Community Med* 2012; 37:126-9.
12. Chan CAY, Cate OT, Custers EJFM, Leeuwen MSV, Bleys RLAW. Approaches of anatomy teaching for seriously resource-deprived countries: A literature review. *Educ Health (Abingdon)*. 2019; 32(2):62-74. doi: 10.4103/efh.Efh_272_17.