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The Five Finger Method: A Novel Approach to Teach Selected Topics of Human Anatomy

Mohandas Rao KG¹ *, Somayaji SN¹, Rajashekar Rao Barkur², Vincent Rodrigues³, Sapna M¹, Ashwini LS¹

¹Department of Anatomy, Melaka Manipal Medical College, Manipal University, Manipal, India.

²Department of Biochemistry, Melaka Manipal Medical College, Manipal University, Manipal, India.

³Department of Preclinical Sciences, Faculty of Medical Sciences, University of the West Indies, St. Augustine, Trinidad and Tobago, West Indies.

ABSTRACT

Background: Anatomy is considered by many students as a difficult and uninteresting subject, and often students do not retain what they learn. Learning Anatomy requires both remembering the facts and understanding. In an effort to make remembering certain topics easier, more interesting and understandable for students, we used innovative methods of effective teaching. One such method is the “five finger method”, in which five fingers of the hand are used to explain and understand certain topics.

Methods and Material: The “Five Finger Method” is used to teach the superficial muscles of the front forearm, abnormal positions of the appendix and certain other topics of human anatomy. Following the “Five Finger Method” teaching sessions feedback of students (n=98) was taken using a structured Likert scale type of questionnaire.

Results: The student feedback showed higher scores (where score 5 is strongly agree and score 1 is strongly disagree) for items like an innovative method of teaching (Likert scale score 4.01/5), useful in making the class interesting (Likert scale score 4.05/5), useful for students during self-study / revision (Likert scale score 4.06/5), useful in understanding the topic (Likert scale score 3.77/5), can be used for teaching topics of other disciplines (Likert scale score 4.09/5).

Conclusions: Based on the student feedback it can be stated that “Five Finger Method” is a useful method of teaching which makes the topic interesting and helps in understanding it and this method may be used to teach certain topics in other disciplines.

Keywords: innovative teaching, small group teaching, forearm flexors, appendix

**Corresponding author*

Email id: mohandaskg@gmail.com

INTRODUCTION

Finding innovative ways to transfer information to students is always a challenge for teachers. Several innovative methods have been reported and are being used by many teachers around the world. [1, 2, 3, 4, 5] Anatomy is a difficult subject for students because of its vast and complex nature. The Anatomy learning involves much of understanding and visualization of structures using pictures, dissection specimens, models etc. However, there are certain topics which are of recall level, yet, are essential or further understanding of the area. For example, names of branches of arteries or names of branches of nerves must be known for proper understanding of their distribution etc. Similarly, once the students know the names of muscles in a compartment of the limb, then they can proceed to understand their attachments and actions. In other words, remembering some basic structures makes a strong foundation for further proper understanding of the subject. Keeping this in mind, we implemented an innovative method of teaching the use of the five fingers of a hand to remember certain topics of Anatomy to assist the students,

METHODS AND METHODS

Five finger method of teaching:

This teaching activity was carried out for the undergraduate medical students of Melaka Manipal Medical College, Manipal, India. The activity was mainly carried out during the small group anatomy dissection sessions of 2 hours duration. For small group dissection sessions, the class is randomly divided into groups of 15 to 20 students. Each group was assigned a teacher who explains a specific topic using pre-dissected formalin fixed specimens and simulated models. The five finger method of teaching was carried out during such sessions, as the number of students in a group was small and there was much opportunity for one on one interaction between the students and the teacher. Five finger method used in teaching of some topics are discussed below.

Superficial muscles of front of the forearm using five fingers of hand:

As shown in the Figure 1, the ventral (palmar) side of the wrist was placed over the medial epicondyle of the opposite limb and the students were asked to consider the hand as the common origin of the 5 superficial flexors arising from the medial epicondyle and the five fingers (not so widely spread) as the five superficial muscles of the front of the forearm. Among the five fingers, the shortest digit thumb indicates the shortest of the five muscles, pronator teres; the index finger directing towards the lateral end of wrist indicates the flexor carpi radialis; the middle finger directing towards the centre of the wrist indicates the palmaris longus; the ring finger indicates the flexor digitorum superficialis and the little finger directing towards the medial end of the wrist indicates the flexor carpi ulnaris.



Figure 1: The picture illustrates the use of five fingers to know the five superficial muscles of the front of the forearm. The palmar surface of the hand is placed over the proximal part of front of forearm and five fingers are directed towards the hand indicating the muscles. (PT- pronator teres, FCR- flexor carpi radialis, PL- palmaris longus, FDS- flexor digitorum superficialis, FCU- flexor carpi ulnaris)

Probable positions of the appendix using five fingers of hand:

As shown in the Figure 2, the palmar surface of the right hand was placed over the right lower part of the anterior abdominal wall about 3 inches superomedial to anterior superior iliac spine and the students were asked to consider the hand as the caecal opening of the appendix and the five fingers (which were widely spread) as the five possible variant positions of appendix. Among the five fingers, the thumb directing upwards indicates the paracolic position (appendix placed parallel to the ascending colon); the index finger directing towards the left hypochondriac region or spleen indicates the splenic position; the middle finger placed horizontally directing towards the mid-line indicates the promontoric position; the ring finger directing towards the pelvic cavity indicates the pelvic position and the little finger directing downwards towards the inguinal ligament indicates the inguinal position of appendix. The students are encouraged to practice these by placing their hand on their own body so that they not only remember the terms but also understand the *in situ* positions of these structures.

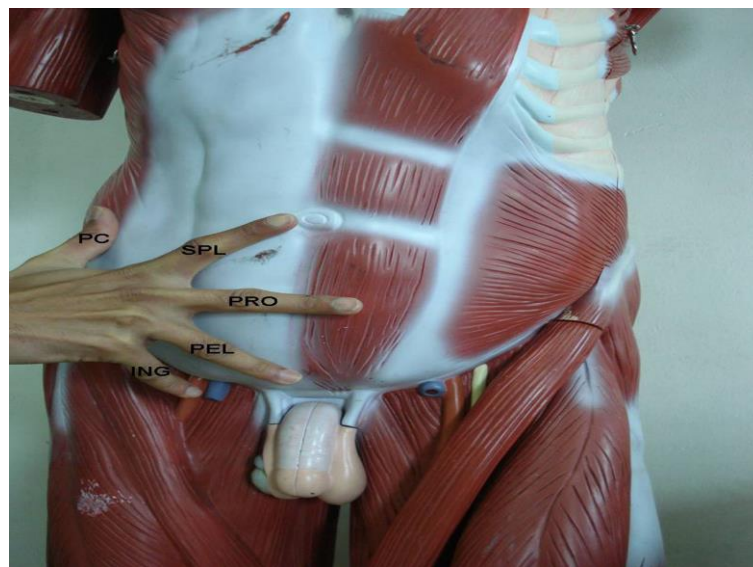


Figure 2: The picture illustrates the use of five fingers to know the five possible unusual positions of the appendix. The palmar surface of the hand is placed over the right lower part of the anterior abdominal wall about 3 inches superomedial to anterior superior iliac spine and fingers are widely spread. Direction of each finger shows a specific position of appendix. (PC- paracolic position, SPL- splenic position, PRO- promontoric position, PEL- pelvic position, ING- inguinal position)

RESULTS

Students' feedback:

The student (n=98) were given a structured Likert type of questionnaire to respond about the “five finger method” of teaching. The questionnaire was validated by the experts before the administration. The student feedback showed higher scores (where score 5 is strongly agree and score 1 is strongly disagree) for items like an innovative method of teaching (Likert scale score 4.01/5), useful in making the class interesting (Likert scale score 4.05/5), useful for students during self-study / revision (Likert scale score 4.06/5), useful in understanding the topic (Likert scale score 3.77/5), can be used for teaching topics of other disciplines (Likert scale score 4.09/5). The detailed responses of students to the individual items of the questionnaire are shown in the pie charts (Fig. 3, Fig. 4, Fig. 5, Fig. 6 and Fig. 7).



Figure 3: The pie chart shows the students' response to the questionnaire item whether the five finger method of teaching was an innovative method. As it is shown, about 90% of students believed that it is an innovative method of teaching. [SA- Strongly agree, A- Agree, U- Uncertain, D- Disagree, SD- Strongly disagree]

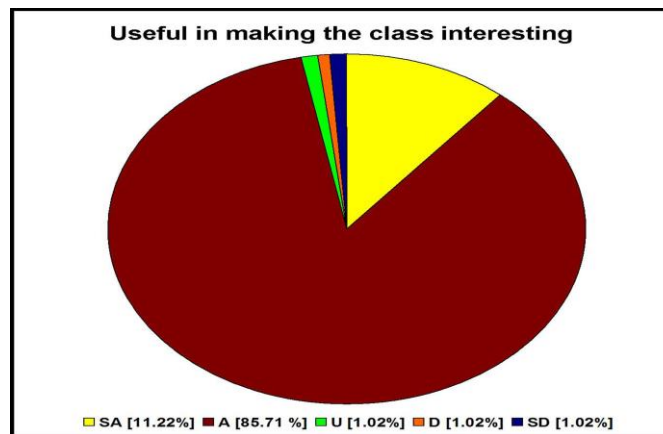


Figure 4: The pie chart shows the students' response to the questionnaire item whether the five finger method of teaching was useful in making the class (topic) interesting. As it is shown, about 96% of students believed that it helped to make the class interesting. [SA- Strongly agree, A- Agree, U- Uncertain, D- Disagree, SD- Strongly disagree]

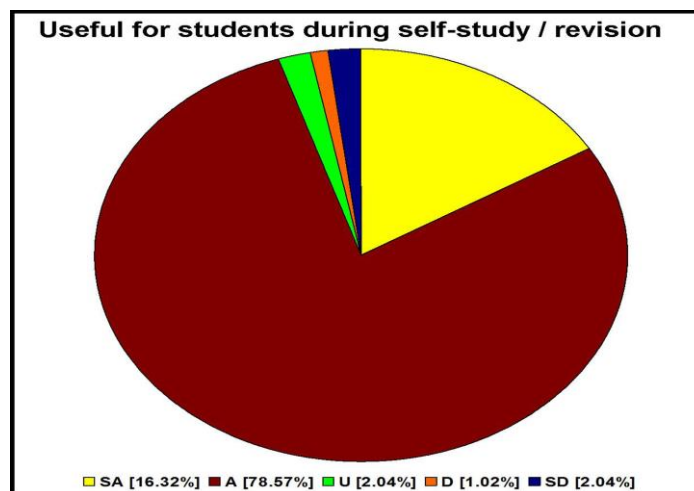


Figure 5: The pie chart shows the students' response to the questionnaire item whether the five finger method of teaching was useful during self study / revision. As it is shown, about 95% of students believed that it was useful during self study / revision. [SA- Strongly agree, A- Agree, U- Uncertain, D- Disagree, SD- Strongly disagree]

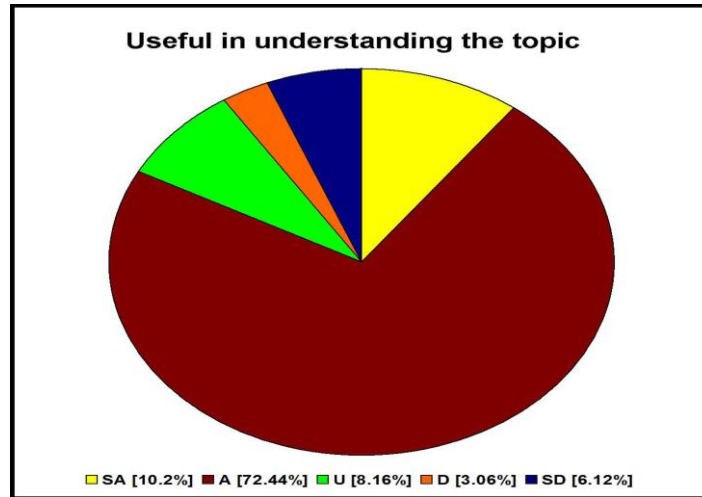


Figure 6: The pie chart shows the students’ response to the questionnaire item whether the five finger method of teaching was useful in understanding the topic. As it is shown, about 82% of students believed that it was useful in understanding the topic. [SA- Strongly agree, A- Agree, U- Uncertain, D- Disagree, SD- Strongly disagree]

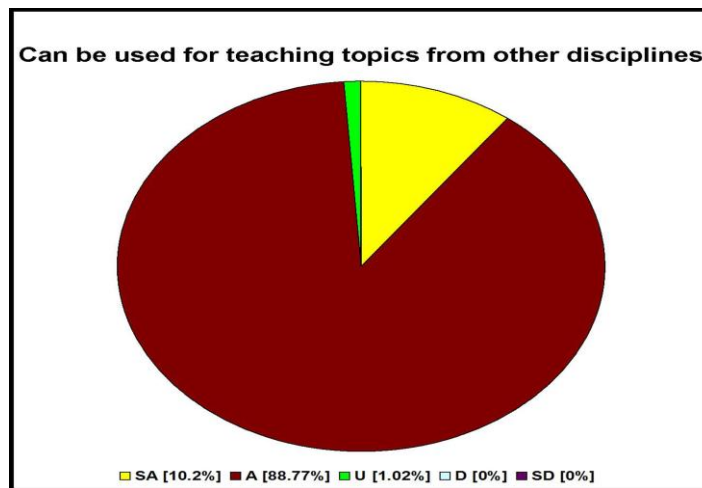


Figure 7: The pie chart shows the students’ response to the questionnaire item whether the five finger method of teaching can be used to teach the topics from other disciplines. As it is shown, about 98% of students believed that it was useful to teach the topics from other disciplines. [SA- Strongly agree, A- Agree, U- Uncertain, D- Disagree, SD- Strongly disagree]



Figure 8: The picture illustrates the use of five fingers to know the five branches of brachial artery given in the arm. The palmar surface of the hand is placed over the front of the arm, fingers spread between medial and lateral edges of arm. Each finger represents a branch of brachial artery in the arm. (PBA- profunda brachii artery, MA- muscular branch, NA- nutrient artery to the humerus, SUCA- superior ulnar collateral artery, IUCA- inferior ulnar collateral artery)



Figure 9: The picture illustrates the use of five fingers to know the five nerves supplying the anterior quadrant of the scalp. The palmar surface of the hand is placed over the face in such a way that the fingers are spread and directed towards the anterior quadrant of the scalp. Each finger represents a nerve which supplies the anterior quadrant of the scalp. (ST- supra-trochlear nerve, SO- supra-orbital nerve, ZT- zygomatico-temporal nerve, T-F- temporal branch of facial nerve which is the motor nerve to frontal belly of occipitofrontalis muscle, AT- auriculotemporal nerve)

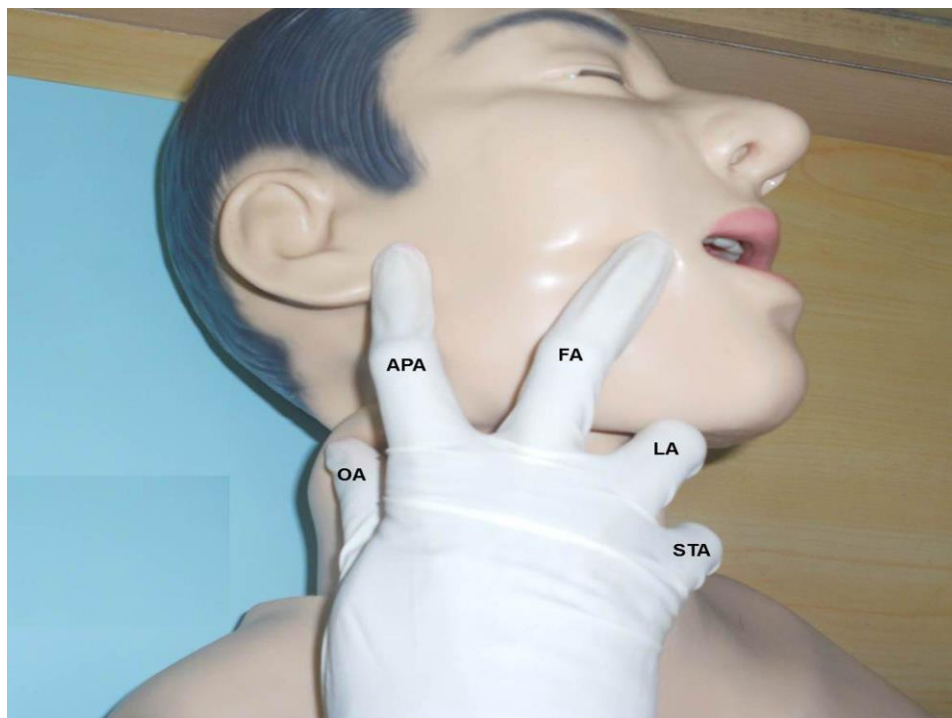


Figure 10: The picture illustrates the use of five fingers to know the five branches of external carotid artery given in the carotid triangle of the neck. The palmar surface of the hand is placed over the anterolateral aspect of the neck with fingers placed as shown in the picture. Each finger represents a branch of external carotid artery in the carotid triangle of the neck. (OA- occipital artery, APA- ascending pharyngeal artery, FA- facial artery, LA- lingual artery, STA- superior thyroid artery)



Figure 11: The picture illustrates the use of five fingers to know the genicular nerves and vessels and their course in the popliteal fossa. The index and ring fingers are placed above the condyles of the femur, thumb and little finger (not seen in the picture) are placed below the condyles of tibia and middle finger is passed between the tibial and femur into the joint cavity. Each finger represents a set of genicular nerve and vessels. (SMG- superomedial genicular, MG- middle genicular, SLG- superolateral genicular, ILG- inferolateral genicular)

DISCUSSION

As shown in the figures, students felt that it is a useful method of teaching which makes the topic interesting and helps in understanding it. It is interesting to note that the students adapt this method even at the time of revision or self study after the class. In addition, there were some positive general comments, most of them suggesting the implementation of such teaching methods for other topics and in other disciplines. Some of the other comments given by the students are mentioned below.

- Five finger method of teaching Anatomy is really new and interesting. I am looking to use this method in other topics too.
- I feel there are many other topics in Anatomy where we can make use of this method of teaching. Just need to think in that direction.
- Now, I will never forget the positions of appendix.
- This method helped me a lot when I was studying on my own.

One of the observations made in the student feedback is that the five finger method of teaching is an innovative method (Fig. 3). It is generally observed that any innovation in a teaching method which is different and unique is well received by the students. There are many reports of innovative teaching methods followed to teach anatomy [6, 7, 8]. In most of these methods its either using a simulated model or using sophisticated computer technology. Here we are introducing a teaching method which does not require any additional aids except for the five fingers of the hand. It is for the same reason that about 95% of students have found that this method of teaching was useful during self-study or revision (Fig. 5). In addition to above mentioned topics, this method is useful in teaching other selected topics such as branches of the brachial artery in the arm (Fig. 8), superficial set of short lateral rotators of the thigh found in the gluteal region, nerves supplying the anterior quadrant of scalp (Fig. 9), nerves supplying the posterior quadrant of scalp, branches of external carotid artery in the carotid triangle (Fig. 10), genicular nerves and arteries in the popliteal fossa (Fig. 11) etc. Students were also of similar opinion that such methods should be used more often in other disciplines too (Fig. 7). It is upto the teachers that, how we can come out with such effective innovative ideas.



CONCLUSION

It is essential for the teachers to continuously keep looking for the innovative ideas of teaching. "Five finger method" is one such method which can be used to teach not only the topics of anatomy, probably also the appropriate topics in other disciplines.

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