

Perceptions Of Undergraduate Medical Students On Use Of Flashcards As A Mode Of Learning Anatomy

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Abstract: Background & Objective: Anatomy is one of the fundamental subjects taught to the medical students in their first year of medical curriculum. Of its many subdivisions, gross anatomy is one of the vast and important components covered in a short span of one year. The content matter of this subject is very volatile and many undergraduate students face difficulty in learning and recapitulating it. There are many methods adopted by students for learning Anatomy and flashcards is one amongst it. This study was thus planned with an objective to design flashcards for learning gross anatomy, to administer it to the undergraduates for self study revision and to take their perceptions on it. Methodology: The flashcards for gross anatomy of upper limb and lower limb were designed and given to the first year undergraduate students of a premier Medical College in Mumbai. The perceptions of the students on the use of flashcards in learning Anatomy were taken on a prevalidated questionnaire and analyzed.

Results: 90% of the students felt that the flashcards helped them to do a quick revision, memorize the content easily and thus perform better in the exams. Conclusion: Flashcards proved to be an effective self study tool for learning gross anatomy [Patil R NJIRM 2016; 7(2):110-112]

Key Words: Flashcards, Gross anatomy, Perceptions

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Introduction: The subject of Anatomy forms one of the foundation stones of medical curriculum. If medical students fail to gain knowledge or understand the subject of Anatomy during their tenure of first year, they would definitely face difficulty in applying its concepts while treating a patient. This all would lead to a development of an incompetent medical graduate. The subject has many subdivisions and gross anatomy is the vast and most volatile component. The first year students often find it difficult to comprehend because of the maximum use of Latin and Greek terminologies in it.

The delay in the admission process further adds burden on the students in understanding and learning the subject. Hence most of the learning happens by doing self study. There are many methods employed by an undergraduate student for learning and recapitulating this volatile subject during self study. But, since, dissections and learning from a dissected specimen forms the fundamental learning process in Anatomy, none of these methods that promote rote learning are helpful.

After taking into consideration all these problems, we thought of developing an adjunct method of learning the dissected specimens.

Flashcards have been used to learn medicine since ages. The learning with flashcards incorporates, in a natural way, both testing and spaced practice. These

two features when combined support both efficient learning and accurate metacognitive monitoring¹. Commercially, there are many types of flashcards available for learning anatomy. But, unfortunately, there is no information available to suggest their effectiveness in the literature. All these factors motivated us to conduct the present study on the undergraduate students in Anatomy.

Material and Methods: This study was conducted in the Department of Anatomy of a premier Medical College in Mumbai. The institutional ethics committee permission was taken prior to the commencement of this study. The flashcards for gross anatomy were designed taking in account our students needs. The schematic diagrams of individual muscles of upper limb and lower limb, specially depicting their bony attachments were downloaded from an internet site www.rad.washington.edu where it was freely available.

The content matter i.e. the details of the muscles was compiled after referring standard textbooks of Anatomy (Gray's anatomy 40th edition). These details were specifically grouped under the headings: proximal attachment (origin), distal attachment (insertion), actions and innervations. The text material along with the images was validated from the senior faculty members in the department of Anatomy. After validating, printouts were taken in such a manner that the image of a particular muscle was matched with its

details on the reverse. The upper limb and lower limb flashcards were segregated and stacks were created by fixing them on a metal ring. (Fig 1) Five sets of flashcards were made for each part.



Fig. 1. Stack of flash cards (front and back)

These flashcards were made available to the 180 first MBBS students and 80 first year Occupational therapy and Physiotherapy (OT/PT) students for self study during their revision and practical classes of the respective parts (Fig. 2).

Figure 2: Practical revision class using flash cards with dissected specimen for learning



The OT/PT students were able to use these for five days of their classes. MBBS students were not able to use these due to their pre-scheduled classes and hence were excluded from further study process. Thus, this study was carried out in 80 OT/PT students. A practical examination (comprising of spots and viva voce) was conducted as a part of term completion for these students. Out of the 80 OT/PT students, 58 students appeared for the exams and only their consent was taken. The perceptions of these 58 OT/PT students were taken immediately after their exams. The prevalidated questionnaire comprised of closed ended questions and open ended questions (semi-qualitative research or semi-quantitative research) was administered to the students immediately after completion of their examination. The filled questionnaire was collected, analyzed and their

responses were calculated in percentage. The views of the students were also analyzed.

Results:

- 40 % of students were unaware of the existence of 'Flashcards' as one of the method of learning
- All students felt that flashcards were an effective method of learning the subject of Anatomy
- 93 % students thought that the content of the flashcards used was adequate
- 95 % of students felt that the flashcards helped them in revising the subject of anatomy
- 90 % students felt that flashcards helped them in answering in the examination
- All of them felt that should use this method of self study for other practical sessions also
- 22 % students suggested modifications/ changes in the flashcards

Discussion: Flashcards are mainly used for the acquisition of the factual knowledge and thus it represents a central component of medical education². It's a known fact, that the assimilation of this factual knowledge would help the medical student in acquiring clinical reasoning skills. The use of flashcards as an aid in teaching-learning dates back to the 19th century. The first medical use of flashcards was made by Favell Lee Mortimer, an author of educational books for children³. There have been lot of modification and evolution in the types of flashcards.

Earlier the flashcards were in the form of simple paper and now it is in the form of electronic version. In our study, we have designed a two-sided physical type of flashcards³. A similar study was conducted on the 374 undergraduate students of Kent State University by Wissman K.T et al⁴. Apart from the fact that flashcards help to memorize better, the other reasons given by the students in their study was that the flashcards were easy way to learn, convenient to carry, helps organizations, forces rereading etc. In the present study, the justification given by the students for feeling that flashcards were effective was the pictorial depiction of individual muscle on each card. They felt that the design of these flashcards helped them in memorizing the details better. This effectiveness could also be attributed from the principle of learning standpoint as it provides feedback in a natural way⁵.

In the present study, we had given these flashcards during the revision and practical classes, which suggests that each student must have gone through the same for more than 3 times and hence they felt that it helped them in answering in the examination (spots/viva). The study done by Wissman et al also mentioned that the flashcards needs to be used atleast 3-5 times so as to recall it later ⁴.

100% of the students felt that the flashcards should be used in the next sessions. The reason for making them say so was echoed in their answers where almost all of them unanimously felt that the flashcards served as best revision and self study tool. This could be because flashcards are usually used for studying and subsequent self-testing. Recent research in cognitive psychology has showed that testing per se affects learning ⁶. It is a known fact that testing is effective in promoting long-term knowledge retention.

22 % students felt that changes / modification were required in the current flashcards in terms of their number. They suggested additional flashcards should be compiled and made into a bigger stack. The literature search showed two studies on the same. One study presented by Kornell ⁷ concluded that to be efficient, flashcards should be studied in relatively larger stacks across multiple days. But, another study by Wissman et al ⁴ postulated that majority of students preferred to use a smaller stack of flashcards while studying. In our study since majority of the students did not feel the need of a bigger stack, we concluded that the smaller stacks were better for handling as it would be used in dissection hall as an adjunct with the specimens.

Conclusion: The use of flashcards is one of the effective means of learning anatomy. Its use for self study revision helps memorize and retain things for longer duration which enhances performance in examinations. Proper design of flashcards according to learning needs of the students leads to better acceptance amongst them. Flash cards need to be used by students on regular basis to aid them cover the extensive syllabus of medicine.

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