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## **Pharmacology studying practices and theory presentation skills followed by under graduates: A cross sectional study in a Tertiary Care Teaching Hospital in Andhra Pradesh India**

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**Abstract**--Background: We observed subpar performance in written assessments. We wanted to identify and address the modifiable contributing factors. Aim: study was undertaken to assess studying practices and preparation for assessments by students in Pharmacology. Methods: study was conducted using questionnaire among 147 fifth and 147 third semester medical students. Questions regarding timing of preparation, revision, sources of drug information, difficult topics, practical exercise preference, e-learning sources, time allotment for questions and diagrams usage were posed. Results: 56% third semesters started studying pharmacology only before monthly tests in contrast to fifth semesters who were trisected in their approach of serious studying. Textbooks were primary source. Higher

number of fifth semesters (93%), than third semesters (80%), used internet for learning. Fifth semesters browsed internet for learning more than third semesters. Greater number of fifth semesters viewed online lecture videos and referred to online medical dictionary compared to newer batch. When asked to select practical exercises, fifth semesters favoured prescription writing whereas third semesters preferred clinical problems. Conclusion: Blended approach and peer group learning was more common in seniors. Junior batch students had superficial approach, were task driven towards exam preparation and presentation individualistically.

**Keywords**---studying practices, undergraduates, presenting skills, e-learning.

## **Introduction**

Medical education is facing problems and challenges for quality education [1]. Pharmacology is a part of medical undergraduate curriculum during pre-clinical years. Students find it difficult to remember “must-know details” of several drugs [2]. Currently our students belong to Generation Z. Generation Z are born after 1995[3]. Generation Z exist in a world with web, internet, smart phones, laptops, freely available networks and digital media [4]. They prefer not to spend long periods of time listening to lectures. Smartphones allow users to access a vast amount of information and interact with resources conveniently and quickly [5]. Students are continually seeking study tools and materials that utilize new formats and emerging technologies as a means of delivering the content [6]. There are various methods to assess the knowledge domain which include long essay questions, short essay questions, modified essay questions, MCQs, and problem-solving questions involving short vignettes [7]. Summative assessment is the dominant force in both undergraduate and postgraduate medical education [8]. The student’s surveys, as a means of evaluating teaching, helps to focus on the need of changing teaching pattern [9]. This study was planned to know the learning methodology and preferred exam pattern by medical undergraduates.

## **Material and Methods**

A cross-sectional study was carried out in medical undergraduates in ACSR Government Medical College, Nellore. A total of 294 medical undergraduates of two batches -147 fifth semester students and 147 third semester students participated in the survey regarding studying practices and writing skills. This study was done during a period of three months from December, 2019 to February, 2020. A questionnaire was framed after referring the current literature. This study was approved by Institutional Ethics Committee, ACSR GMC, Nellore. Students were briefly explained the purpose of study. Written informed consent was obtained from the students. The questionnaire had questions regarding source of drug information resorted to, time of beginning of their exam preparation, methods of revision, devices used for internet access, educational reason for internet browsing and writing skills employed by students in examination. The filled questionnaires were collected from the students. Data was

entered in Microsoft excel and analysed using SPSS software version 18. Results were displayed in terms of percentages & figures. Significance and association between two variables were assessed by using chi-square test. P value less than 0.05 was considered statistically significant.

**Results**

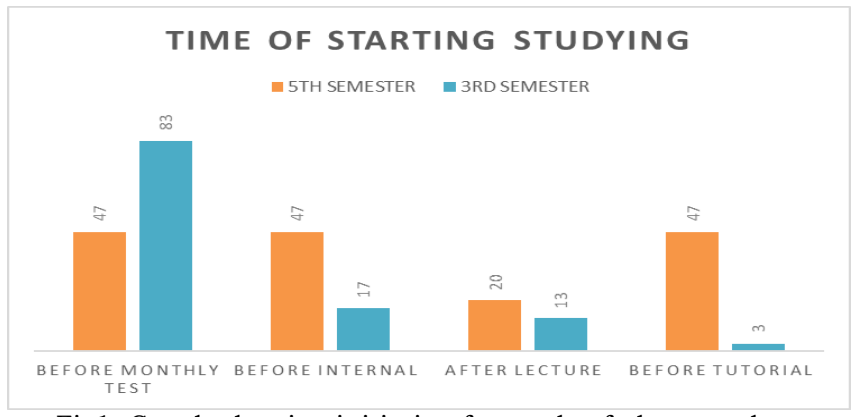


Fig1: Graph showing initiation for study of pharmacology

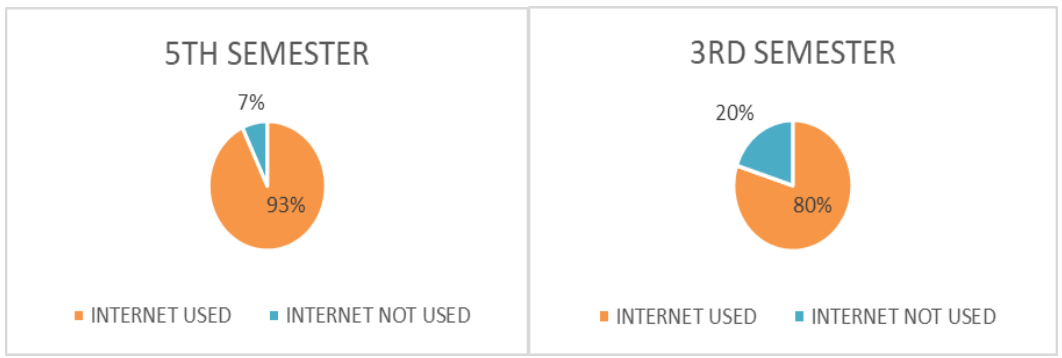


Fig2: Graph showing percentage of students who browse internet for learning pharmacology

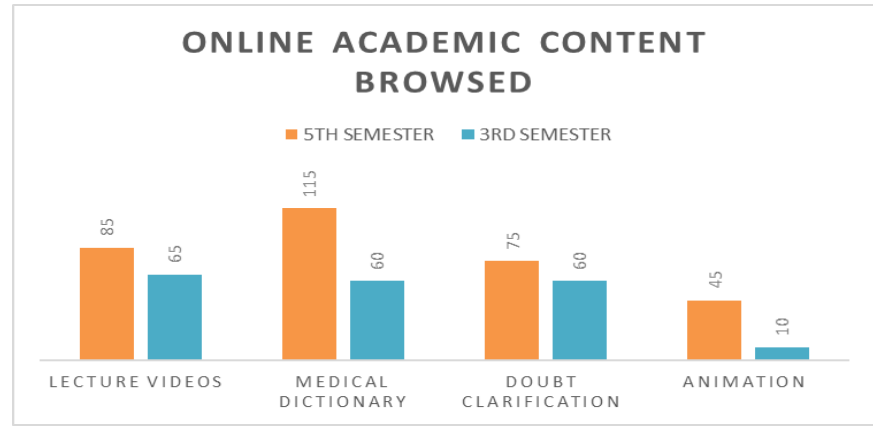


Fig 3: Graph showing educational purpose of internet access

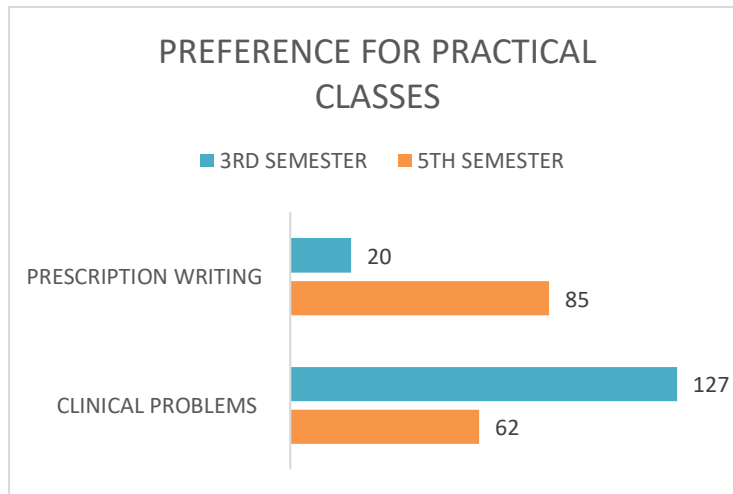


Fig 4: Graph showing preference of practical exercises

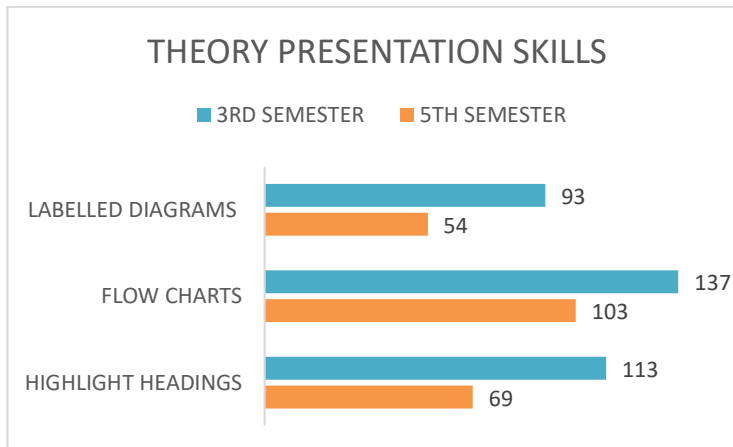


Fig 5: Graph showing presentation skills in written exam

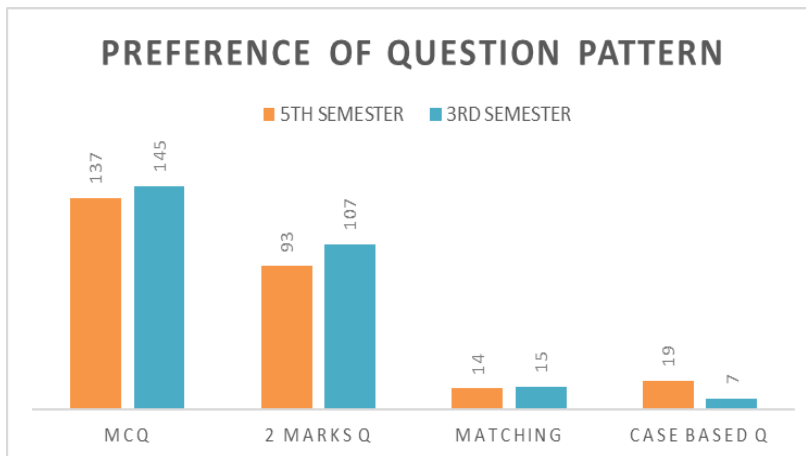


Fig 6: Graph showing preferred question pattern in exam

## Discussion

Overall, fifth semester students were trisected in their approach of actually seriously start studying shortly before tutorial (32%) or monthly test (32%), or for an upcoming internal assessment (32%) whereas just over half of the third semester students (56%) started studying pharmacology only before monthly tests reflecting superficial or surface approach. According to study by Subash, 62% opted studying only for monthly tests and viva voce exams [10]. This observation reaffirms the adage that assessment drives learning. Surface approach is to prefer studying only to pass the exam, which will cause them to have difficulty in using their knowledge while solving real life problems in the future [11].

Generation Z is accustomed to getting information on demand, adept at finding information, yet they may procrastinate until the last minute [12]. Greater number of fifth semester students (93%), than third semester students (80%), used internet for pharmacology learning ( $P < 0.01$ ). Blended approach (internet based and lectures) has been reported to enhance students learning [13]. In spite of availability of e-learning platforms, our students preferred text books as primary source of information. Both batches were alike in that, 23% of fifth semester and 17% of third semester students referred class notes additionally. According to Skandhan et al, 87% had the habit of writing notes during lecture class which remained as the source (78%) for their regular studies [14].

Both the batch students mostly used smart phones to access internet. There was significant difference in the viewing of lecture videos (58% of senior students and 44% of juniors,  $P < 0.05$ ) and reference of medical dictionary online (78% of fifth semester and 41% of third semester students, ( $P < 0.01$ )). E-learning crosses geographical boundaries and time zones and provides access for the learner to a wealth of resources beyond those which he or she can easily access in his or her home institution [15]. Average number of hours expended on net browsing for academic purpose was comparable in both batches at less than 2 hours; albeit to an overwhelming fraction by older batch (88%) than younger batch (66%) ( $P < 0.01$ ). There was significant difference observed in preference for types of practical exercises (42% of fifth semester students and 86% of third semester are in favour of clinical problems, ( $P < 0.01$ )), while 58% of fifth semester and 14% of third semester students favoured prescription exercises ( $P < 0.01$ ). In the study by Bhalli et al, majority of the students had chosen interactive lectures (28.57%), problem-based learning (25.98%) and small group discussions (20.78%) as their preferred teaching methodologies [16].

Pharmacology is widely felt as a challenging subject attributed to the innumerable facts to be memorised. There was significant difference in the strategy adopted for memorizing pharmacology between the two batches: 80% of fifth semester students used mnemonics to memorize the subject whereas 80% of third semester resorted to repeated revisions to retain the subject. At the commencement of examination, 50% of fifth semester chose to revise the subject in groups when compared to third semester who preferred revision by self-study (77%,  $P < 0.01$ ). In our study, Neuropharmacology was unanimously perceived to be a tough topic to assimilate.

Summative Assessment Theory Paper Presentation Skills: We observed that both batches were identical in lacking pre-planned time distribution to questions before attempting written exam: 52% of fifth semester and 56% of third semester students only allocate time for individual questions prior to start of the examination. Third semester students were better in theory presenting skills during exam (47% of fifth semester and 77% of third semester highlight headings,  $P < 0.01$ ), 70% of fifth semester and 93% of third semester used flow charts  $P < 0.01$ ). Newer batch greatly preferred MCQs (93% of fifth semester and 99% of third semester  $P < 0.05$ ). MCQs benefit from high reliability when questions are valid [17].

## **Conclusion**

Recent batch students were oriented towards cracking exam individually, both in preparation as well as presentation whereas their seniors participated in peer learning as well as blended learning. In our study, we observed lacunae in theory assessment paper presentation skills, more so in seniors. In line with the current Curriculum Based Medical Education guidelines, our students also favoured application based practical exercises over lectures. As pointed out by our students, we would like to conduct additional small group discussions and prescription writing exercises in the perceived challenging section of neuropharmacology. Furthermore, we would like to correct the pitfalls by priming students to sharpen their approach to summative exams by prior time allotment according to the maximum marks ascertained in question paper and get them accustomed to use of high yield flow charts, diagrams and bulleted points.

## **Limitations**

This study was done prior to starting of Competency Based Medical Education implementation in India when Pharmacology was taught and learnt for one and a half years duration. This study was done in the pre-covid era, after which there was a gross change in teaching learning methodology.

**Source of support:** Nil

**Conflict of interest:** Nil

## **References**

1. A P Choules. The use of e learning in medical education: a review of the current Situation Postgrad Med J 2007; 83:212–216. Doi: 10.1136/pgmj.2006.054189.
2. Balbir Singh Deswal, Vijay K. Singhal Problems of medical education in India International Journal of Community Medicine and Public Health 2016 Jul;3(7):1905-1909.
3. Bhalli MA, Sattar A, Asif M. Teaching strategies; perception of medical students, used in Basic sciences years. Professional Med J 2016;23(5):614-619. DOI: 10.17957/TPMJ/16.3206.
4. Cilliers, E.J. (2017). The challenge of teaching generation Z. People: International Journal of Social Sciences, 3(1), 188–198. DOI: 10.20319/pijss.2017.31.188198.

5. Davies BS, Rafique J, Vincent TR, Fairclough J, Packer MH, Vincent R, et al. Mobile Medical Education (MoMed)—how mobile information resources contribute to learning for undergraduate clinical students—a mixed methods study. *BMC Med Educ.* 2012; 12:1.
6. Downing SM. True-false, alternate-choice, and multiple-choice items. *Educ meas, Issues Pract.* 1992; 11:27–30.
7. Harden R. AMEE Guide 21, curriculum mapping, a tool for transparent and authentic Teaching and learning. Evaluating the outcomes of undergraduate medical education. *Medical Education*, 37, 2003, 580 – 81.
8. K.R.Subash. “Likes and dislikes” – a questionnaire based analysis and feedback from Medical school learners. *International Journal of Pharmacology Research.* Vol 4 | Issue 2014 | 173-175.
9. Learning pharmacology by metaphors: A tale of aminoglycosides. 2016 Indian Journal of Pharmacology Published by Wolters Kluwer – Medknow.
10. Rajani Ranganath , Chitra Rajalaksmi, Miriam A Simon. Medical Students’ Perceptions of E- assessment: Multiple Choice Questions used as a Tool of Assessment for Preclinical Years *Journal of Medical Education* Winter 2017; 16(1):35-43.
11. Sadeghi R, Sedaghat MM, Ahmad FS. Comparison of the effect of lecture and blended teaching methods on students’ learning & satisfaction. *Adv Med Educ Prof.* 2014;2(4):146-150.
12. Seemiller C, Grace M. *Generation Z Goes to College.* San Francisco, CA: Jossey-Bass; 2016.
13. Sinead M O’Shaughnessy & Pauline Joyce. Summative and Formative Assessment in Medicine: The Experience of an Anaesthesia Trainee *International Journal of Higher Education* Vol. 4, No. 2; 2015.
14. Singh, A.P., Dangmei, J. (2016). Understanding the generation Z: the future workforce. *South-Asian Journal of Multidisciplinary Studies*, 3(3), 1–5.
15. Skandhan KP, Dilroop Dileep, Abhai Sankar P Sasi. Teaching Physiology: Under Graduates’ Perspective *IOSR Journal of Research & Method in Education* 2015: 5(3) - 8285.
16. Suda KJ, Bell GC, Franks AS. Faculty and student perceptions of effective study strategies and materials. *Am J Pharm Educ.* 2011;75(10): 201.
17. Zeynep Baykan, Yesim Senol, Aysen Melek Aytug Kosan, Melis Nacar. The Relationship between Erciyes, Selcuk, and Akdeniz Medical School Third-Year Students’ Learning Approaches and Their Non-attendance Attitude and Tendencies, *Journal of Medical Education* Spring 2017; 16(2):97-108.