

COMPETENCY BASED TRAINING OF UNDERGRADUATE MEDICAL STUDENTS ON PAPANICOLAOU TEST (PAP) SMEAR.

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Title: Competency based training of undergraduate medical students on Papanicolaou test (PAP) smear.

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Abstract:

Background: Cervical cancer is one of the most preventable of all cancers and is the second leading cause of death from malignancy amongst female patients. Utilizing Pap test for early detection of carcinoma cervix by all graduating medical students would be an excellent preventive strategy. The current modes of teaching medical students (lecture-based curricula) neither encourage the right qualities in students nor impart a life-long respect for learning.

Objective: At the end of the training, the undergraduate students would become competent in learning about Pap smear with the help of The Pap smear teaching cum testing module (brief lectures + hands on training).

Methods: Following approval by the Institutional Ethics Committee (IEC), the training was divided into theory, practical and demonstration classes, lasting from October 2014 to March 2015. Subjects included 50 students of 3rd MBBS. Pretest were conducted and results were evaluated and tabulated on excel sheet. The students were initiated into clinical application of Pap smear on ZOE model, through demonstration and skill practice under the supervision of trained faculty. Students were asked for their feedback to the questionnaire provided to them. Post-test in the form of a MCQ test, short answer-question was taken for evaluation of theoretical knowledge, scientific principles and application. Practical skills were evaluated based on practice session on ZOE model, assessed on adherence to DOPS checklist for Pap smear, the results were formulated. Student paired t test was performed to compare the scores of the pretest and post-test sessions.

Results: Students showed improvement in post-test compared to the pretest. Feedbacks showed that students were enthusiastic in this innovative way of teaching and expressed their satisfaction. 90% students agreed that competency-based training of Pap smear made them understand the steps and made them confident about carrying out the procedure. Practical assessment was done on ZOE model with DOPS Checklist, 80% students' demonstrated proficiency in practical skills by scoring 100% in checklist adherence.

Conclusion: Interactive-competency-based teaching module among the small group in addition to the didactic lectures can improve the performance of the students and make them better to understand the subject better with lasting effect.

Key words: PAP smear, Competency, training, undergraduate medical students.

Introduction:

Carcinoma cervix is the second leading cause of death due to malignancy in females (1). The diagnosis of new cases per year in India is 1,32,000 and 74,000 deaths occur annually. This accounts for one third of worldwide deaths attributable to carcinoma cervix (2). Unfortunately, majority of these patients come at an advanced stage of malignancy. This is attributable to lack of public awareness and poor facility for its early detection and diagnosis particularly in rural areas.

Fortunately, cancer of the cervix is one of the easily preventable malignancies, with regular screening and follow up tests. Amongst the various screening strategies, Pap smear is the most cost effective (3). Pap smear testing is readily available in leading medical centers but its availability in the peripheral medical centers is still questionable. This is due to lack of resource as well as expertise to perform the test correctly. The result is that there is lack of availability of screening tests and early detection that leads to late identification of cervical cancer with resultant poor prognosis. The resultant mortality and morbidity has serious financial implications to the family and the state.

The current modes of teaching medical students (lecture-based curricula) neither encourage the right qualities in students nor impart a life-long respect for learning (4). Undergraduate students get very little practical skills on the subject of Pap smear during their undergraduate curriculum. If this lack of clinical expertise in emerging medical graduates is addressed, it can lead to appropriate dissipation of this invaluable test in peripheral medical centers where it is needed most.

Therefore, greater emphasis should be given during undergraduate medical program in developing the skills of performing Pap smear, analyzing the result and then counseling the patients. This would prepare the emerging graduates in undertaking this invaluable test during their practicing years ahead. Since traditional didactic lecture become monotonous and students tends to lose interest at the end, there is need to explore some innovation to add along with didactic lecture so that students' involvement in the class increases. Various innovative strategies which include active learning along with didactic lectures may improve students' attendance and performance in the class.

In traditional medical curricula, emphasis is mainly placed on knowledge acquisition, while skills and attitudes receive relatively less attention, even though the latter two are also highly relevant for doctors' performance in practice. We have therefore developed a module that includes short interactive lectures on Pap smear followed by competency-based teaching where development of Pap smear skill and its interpretation is imparted through interactive practice sessions, during this

module. Competency based education helps us produce physicians with a large repertoire of skills, who have the ability to integrate and apply those skills. Competencies are complex cognitive skills, relying on learner progression as they build on existing knowledge and skills. Well defined competencies, such as those evoked by a well laid and well thought out module, such as ours, may enhance engagement, self-directed learning and motivation.

Our main aim is to introduce competency-based training in undergraduate medical students on Pap smear so that they develop capability to correctly perform pap smear test and interpret the smear result with confidence as well as counsel the patients appropriately.

The Pap smear teaching cum testing module (brief lectures + hands on training) would enable IIIrd Professional undergraduate medical students to focus on competency, attitude and communication along with knowledge and skills, by stimulation of the psychomotor domain, understand by active participation rather than by passively absorbing information so that they become self-directed learners cum practitioners.

Methodology:

Permission of Institutional Ethical Committee was taken before the commencement of the study.

The competency-based training on Pap smear was carried out with the IIIrd Professional MBBS of the J. N. Medical College, Aligarh Muslim University, Aligarh, in Department of Obstetrics & Gynecology. 50 students were enrolled in the project.

They were given a pretest through a validated questionnaire. Pretest was conducted with MCQs and Short answer questions and results were evaluated and tabulated, out of a total of 100 marks.

Session on Pap smear was taken which included interactive lectures, videos, photographs, clinical demonstration and skill practice on ZOE model.

After every theory class (20 minutes), students were divided into five small groups of 10 students each and a group leader was made. They were given 15 minutes to interact among themselves the topic taught today under the supervision of faculty. Students were encouraged to interact with the faculty. After 15 minutes of interaction, the leader from each group was allowed to sum up the content taught on the day in 5 minutes each.

During the module teaching it was ensured that the students should understand the anatomy and histology of cervix, transformation zone, and squamo-columnar junction, abnormalities of the cervix & epithelial cells, and guideline for pap smear (Cognitive domain).

During the hands-on training on ZOE model, it was ensured that students would be able to take Pap smear (Psychomotor domain).

Students were motivated that after completing MBBS, when they are posted at PHC level they will educate the women for the importance of screening for carcinoma cervix and able to run screening program for cancer cervix.

Posttest was conducted through MCQ, Short answer questions to evaluate theoretical knowledge and application of the procedure, the students were scored out of a total of 100 marks.

DOPS with Checklist was conducted to assess the practical skills on ZOE model, adherence to the 17-point checklist was evaluated, and each point carried marks according to its significance, the students were scored out of a total of 100 marks.

Students' feedback was taken at the end of module, whereby the students were asked to assess using the Likert scale, which was then analyzed for appraisal of the module.

Student paired t test was performed to ascertain the significance of pre- and post-test.

Competency based template:

Results:

* 50 undergraduate students participated in the study. Average pretest scores were $40.568 \pm 25.980/100$ and post-test scores were $82.345 \pm 7.854/100$ (Table 1).

Table 1: Pretest and post test scores.

Observations	Pretest Mean\pmSD	Posttest Mean\pmSD	p value
Medical students n=50	40.568 ± 25.980	82.345 ± 7.854	<0.0001

Student paired t test showed a significant correlation between pretest and posttest which indicate a significant improvement.

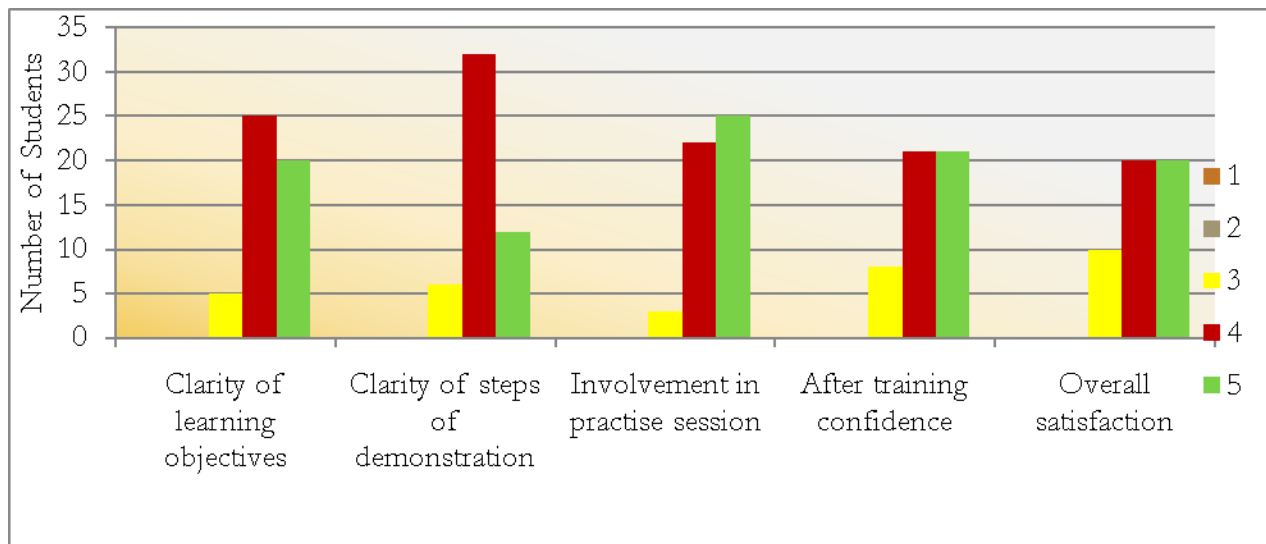
* 100% students achieved more than 70% compliance with the DOPS checklist demonstrating adequate practical skills. 80% achieved 100% adherence with the DOPS Checklist.

Students' feedbacks indicate that interest of the students increased and they liked the way of teaching and use of interactive technique.

* Data analysis of Feedback questionnaire with Likert scale revealed that 90% students agreed that competency-based training of pap-smear made them understand the steps and made them confident about carrying out the procedure (Graph 1).

* Students were of the opinion that more innovative way of teaching learning methodology should be used to make classroom teaching interesting.

Graph 1: Feedback questionnaire analysis



Discussion:

Competencies specifically outline what is expected of learners and what learners should be able to attain upon completion of a teaching module. It acts as an aid where emphasis is on performance and acquiring application-based skills, and not just knowledge, in addition to demonstration of learning by stimulation of the psychomotor domain. With this structure in view, we made a teaching-demonstration-practice session module, the learners and the program were assessed on the basis of competency related to skills reflective of the understanding and application of the pap smear technique. Traditional content-based approaches to curricula deem that a person who has satisfactorily

completed the allotted subjects in a given course of study is considered to have achieved the required amount of knowledge and skills pertaining to that course.

It is gradually emerging fact that students in competency-based learning programs place greater emphasis on meaning (understanding) and application, than reproduction (rote learning and memory); this being unlike the pattern that prevails among students in traditional programs (5, 6).

In our study, a significant correlation was noticed in the performance of the students and competency-based training. It was noted that the students' performance was significantly improved and they showed considerable interest in class room and in interactive sessions. This was evident from the attendance of students which is a good indicator of interest of students in the teaching, throughout the session. We noted that 100% students were present with an internal consistency of 1 which is significantly better than that reported by Gulpinar and Yegen where the internal consistency was 0.71. Learners' advancement in a competency-based module relies on frequent and effective assessment methods. Intrinsic skills such as communication and collaboration remain difficult to measure, but through a holistic assessment like the DOPS checklist we adopted, this integral skill for a clinician was evaluated. Use of a detailed checklist for assessment removes subjectivity.

Students feedback showed a positive response and students were very much satisfied about the teaching learning methodology adapted in the session. This finding is in agreement with the results of the study conducted by Gulpinar and Yegen (7). In fact, most of the participating students in this study pleaded that the entire MBBS curriculum should be similarly modified.

We observed that the students showed considerable interest in class room and practical cum demonstration classes. In particular, they truly enjoyed hands-on training. They also scored well in MCQ and Question-short answers put to them. The psychomotor domain was also observed during their practical skills testing.

The faculty members especially noted the attitude of the students and their ability to interact among themselves while discussing and interacting among the groups. The group leader was also given chance to present the summary of discussion in allotted time. This act helped to groom leadership skills among the students. As suggested by Miller (1990), we achieved competence progression from "knows" to "knows how" to "shows how" to "does" (8). Unfortunately, the long term impact of this teaching module cannot be assessed at this stage. In evaluation matrix also only Level I (reaction) and Level II (learning) matrices could be assessed. Level III (application) & IV (impact) could not be assessed at the time this report is being tabulated.

Competency-based learning is an evolving process based on both performance of contextual skills and cognitive development at various stages of experience, which is carried with our students throughout their professional life.

Conclusion:

Competency based teaching module places great emphasis on meaning, than on memorizing and feel more confident in skill directed learning. The students also showed better interpersonal skills, psychosocial knowledge, and attitudes toward patients. We noted convincing evidence that competency-based learning approach improves student motivation and enjoyment.

This approach will help us prepare physicians for practice that is fundamentally oriented to graduate outcome abilities and are organized around competencies derived from an analysis of societal and patient needs. It deemphasizes time-based training and promises greater accountability, flexibility, and learner centeredness.

Limitation:

It has been estimated that competency-based module (as highlighted in this study) costs more per student for classes as the cost incurred for the model/mannequins has to be considered (9).

Time constrain is main issue, as syllabus have to be completed in the stipulated time. Although this module proved to be effective, it is time consuming and not applicable for larger groups.

Innovative technique cannot be introduced with every topic as certain topic is more suited with didactic teaching.

Implications:

This innovative technique may be implicated in teaching of undergraduate students to develop interest in the topic and to keep them more involved in the class. This would certainly develop and guide them to be a good and competent undergraduate student who would later be the torch bearer serving the community in much better way.

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Nil

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