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Effectiveness and Acceptance of DOAP Session as a Teaching Method for Visual Assessment among Interns at a Tertiary Care Center in Eastern part of India

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Abstract

Background: Visual Assessment is a basic competency required by all medical graduates. The Graduate Medical Education Regulation Amendment 2019 by the Medical Council of India, envisages a competency based and outcome driven undergraduate curriculum. The primary objective of this study was to find out if the interns were competent in the skill of visual assessment. The second was to determine the effectiveness and acceptance of DOAP (Demonstration, Observation, Assistance & Performance) session as teaching-learning method. **Methods:**This was a prospective quasi experimental, observational study conducted at a tertiary care center in Eastern India between May 2019 to Nov 2019. After approval from IEC, 75 interns consented to take part in the study. All participants underwent a Pre-test to know their proficiency in the skill of visual assessment. An educational intervention was done using the DOAP session and a post-test was conducted at the end of their training. A feedback was collected from the interns regarding their perceptions on DOAP sessions. The two tailed Fisher's Exact Test (Graph pad Prism 9) was used to compare the Pre-test and Post-test results. P value ≤ 0.001 was considered to be significant.**Results:**Pre-test performance on different components of visual assessment demonstrated that 21.3 % of interns could assess the distant vision satisfactorily and 24 % the near vision. More than 80 % could not assess the color vision, Visual fields and menace reflex satisfactorily. Post test results showed improvement in each component of visual assessment, color vision(P<0.0001), Distant vision(P<0.0001), Near vision(P<0.0001), Field of vision(P<0.0001) and menace reflex(P<0.0001) after the educational intervention. Feedback from the participants strongly favored the DOAP as an effective method of teaching and learning.**Conclusion:**Interns were found to be grossly lacking in basic skills of visual assessment. DOAP sessions as a teaching method for visual assessment was found to be effective and acceptable. Incorporation of this teaching method will help realize the goal of achieving competent medical graduates.

Keywords: Clinical Competence, Curriculum, education, medical graduate, Learning

Introduction

Eye health problems constitute a significant health burden on society. About 30 % of the population above the age of 70 suffer from age related macular degeneration. The incidence of glaucoma increases from 1 % to 10 %, between the age of 50 and 80 years. Cataract extraction surgeries are one of the most common surgeries performed. Diabetes is the commonest cause of blindness in the working age group.[1] Developmental eye diseases and pediatric eye diseases further add to the ocular morbidity.

It is important that the Indian Medical Graduate (IMG) who will be the primary health care provider be trained in the basic ophthalmic evaluation skills. He needs to recognize, triage and refer appropriately. Medical internship is a fundamental component of undergraduate medical education which represents the critical transition period from a strictly supervised training to independent general medical practice.[2]

Visual assessment which includes Visual acuity, Color vision and Field of vision; form the most basic steps in ophthalmic evaluation.

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Visual assessment is mandatory in school health programs, pre-employment screening, periodical health checkup of employees and most health screening camps and therefore it is appropriate that the IMG be competent in these skills.The current (Traditional) undergraduate medical education system is based on a curriculum which is subject centered and time-based with the evaluation being summative and with little scope for feedback.[3] The medical graduate may have extraordinary knowledge but may lack the basic clinical skills required in practice. He or She may also lack the soft skills related to communication, doctor- patient relationship and ethics.[3] Traditional medical curricula primarily rely on clerkships during clinical period of study to train clinical skills, while preclinical period is mainly used to teach basic sciences.[4]

Competency based medical education (CBME) is gaining momentum across the globe and in India the undergraduate medical curriculum has been revised effective from August 2019. CBME is an outcome-based approach for designing, implementing, assessing and evaluating a medical education program using an organized framework of competencies[5]. The objective here is to ensure that the Indian Medical Graduate develop the competencies required to fulfill the patient's needs in society and deliver as per the national health programs and therefore the teaching-learning methods and assessment are designed to be based on real life medical practice.

As per the Competency based Undergraduate curriculum for the Indian Medical Graduate (2018) by the Medical Council of India

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(MCI), the Competencies & Sub-Competencies in each subject, the Learning Domains (knowledge, skill, attitude & communication), the expected level of proficiency (know, know how, show how & perform) and whether it is a core or a non-core competency is very clearly defined.[5] In the topic Visual Assessment legend OP 1.3, the competency defined is that the student should be able to demonstrate the steps in performing Visual Assessment: for Distant vision, Near vision, Color vision, Pinhole test and Menace reflex. The learning domain is defined as Skill and level of proficiency is Show how. It is a core competency and the teaching learning method suggested is a DOAP (Demonstration, Observation, Assistance & Performance) session.[5]The DOAP is a practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, under supervision or independently. It is a small group teaching learning method for psychomotor skills. In learning skills, the student needs to get actively involved in the learning process and a small group learning is optimal for this.[6]

There is a paucity of tools useful in assessing clinical competence in ophthalmology. The Objective Structured Clinical Examination (OSCE) format provides a standardized testing platform to assess competence with performing the ocular examination and use of Standardized patients provides a more natural format than paper-based or other methods of assessment.[7]

The primary objective of this study was to find out if the medical graduates passing out from our university, who were taught in the traditional way, are competent enough to perform the task of visual assessment.

The second objective of this study was to ascertain if the DOAP method of teaching-learning increases the skills of our interns and through a feedback from the interns, assess their perceptions of the DOAP session as a teaching-learning method for visual assessment.

Methods

This was a prospective quasi experimental observational study conducted during the period of May 2019 to November 2019. All the interns posted in Department of Ophthalmology were clearly explained the purpose of the project and a written consent was obtained. Institutional Ethics Committee approval was received before the study commenced.

Inclusion Criteria

All the Interns undergoing compulsory rotational internship at our university and posted in the Department of Ophthalmology during the period of MAY 2019 to November 2019 were included.

Exclusion Criteria

Interns graduating from other medical colleges and non-consenting interns.A total of 100 interns undergoing two weeks of compulsory rotational internship in ophthalmology were posted in the Department of Ophthalmology in small groups of 5 to 8 interns, between May 2019 and November 2019. Of the 25 interns that were not included in the study, 2 had not graduated from our university and the rest were non-consenting. The balance 75 interns consented to take part in the study.

After one week of being posted in the Department of Ophthalmology the interns were assessed by a Pre-test in the OSCE format of assessment in the ophthalmology OPD for their competency in the visual assessment of a patient. Each intern was asked to rotate through 4 OSCE stations having standardized patients and the necessary equipment, to assess the
1.   Distant vision using Snellen's chart & a Pinhole,
2.   Near vision using Jaeger near vision chart,

3.   Color vision using Ishihara's Chart,
4.   Visual fields by doing a Confrontation test and the Menace reflex by eliciting reflex blinking to rapid approach of an object.

The checklist developed with departmental faculty consensus and MEU members, targeted cognitive, psychomotor and affective domains of learning and had a total score of 20. Depending on total scores they were graded as unsatisfactory (<15), satisfactory (15 to 18) and outstanding (>18). The interns were each scored against their performance with the help of the checklist (Appendix 1 & 2) by faculty. The same day, the group then underwent a teaching session on Visual assessment using the DOAP session.

DOAP Session

In this session a faculty from the Department of Ophthalmology, demonstrated visual assessment without talking to a small group of interns (5 to 6) and they observed the same. This procedure took approximately 10 minutes. The examination procedure was again repeated by the faculty, this time the faculty explained each step and its importance and this took approximately 30 minutes. The interns then described step by step the whole procedure. Each intern then performed the test individually on a patient with the faculty as the observer. The shortcomings of the interns were identified and corrected.

At the end of their training period, approximately 2 months after the DOAP session the interns underwent a post-test similar to the pretest. Their performance was documented using the same checklist by faculty and a feedback was given to them on their performance and remedial measures suggested where required.

After completing the assessments, a feedback was taken from each of the participants regarding their views on using DOAP as a teaching learning method for them in ophthalmology for visual assessment, using a short-structured questionnaire-based feedback form (Appendix 3). The questionnaire used the 5-point Likert scale of Strongly disagree, Disagree, Neutral, Agree and Strongly agree to capture the students' perceptions of the DOAP sessions.

Statistical Analysis

The two tailed Fisher's Exact Test (Graphed Prism 9) was used to compare the Pre-test and Post-test results. P value ≤ 0.001 was considered to be significant.

Results

A total of 100 interns were posted during the study period of which 75 participants fulfilled the criteria to be included in the study. All the 75 participants (100 %) completed pretest evaluation, DOAP sessions, posttest evaluation and participant feedback. For the purpose of analysis, the interns with satisfactory and outstanding performance were taken as 'could assess satisfactorily' and the interns with unsatisfactory performance considered 'could not assess satisfactorily'.

Visual Assessment

During the PRE-TEST (Pre DOAP session), Only 21.3 % of the interns could assess the Distant vision satisfactorily. During Near vision testing only 24 % of the interns could perform the test satisfactorily. More than 80 % of interns could not assess the Color vision & Visual fields or elicit the Menace reflex properly. (Table -1) (Figure-1)

[Before (Pertest) & after (Post-test) the educational intervention]

Fig 1: The performance of the Interns on different Components of Visual Assessment

POST TEST (Post DOAP session), 93.4 % of the interns could assess Distant vision satisfactorily. All the interns (100 %) could assess the Near vision and elicit Menace reflex satisfactorily. The performance for Color vision and Visual field testing was 90.7 % and 85.4 % respectively. (Table -1) (Figure-1)

[The performance before & after the educational intervention (DOAP)]

Table 1: Visual Assessment by Interns

	Components of Visual assessment	Pre (DOAP) Results		Post (DOAP) Results		Remarks (P –Value)
		Able to assess	Unable to assess	Able to assess	Unable to assess	
1	Colour Vision	12(16 %)	63(84 %)	68(90.7 %)	7(9.3 %)	<0.0001
2	Distant Vision	16(21.3 %)	59(78.7 %)	70(93.4 %)	5(6.6 %)	<0.0001
3	Near Vision	18 (24 %)	57(76 %)	75(100 %)	0	<0.0001
4	Field of Vision	5 (6.6 %)	70 (93.4 %)	64(85.4 %)	11(14.6 %)	<0.0001
5	Menace Reflex	6 (8 %)	69 (92 %)	75 (100 %)	0	<0.0001

Feedback on the Educational Intervention (DOAP) (figure-2):

On analyzing the feedback responses regarding the DOAP session as a teaching learning method for Visual Assessment, all 75 interns Strongly Agreed or Agreed that this method of teaching learning increased their skill in Visual Assessment and that it was better than the traditional method by which they were taught. The traditional method was more didactic and the scope for individual participation was less.In their feedback it was found that 60 interns Strongly Agreed or Agreed that this was a less time-consuming teaching method, 4 interns Disagreed and 11 were Neutral in their response.

All 75 interns either Strongly Agreed or Agreed that this method of teaching learning should be adopted for learning visual assessment in the undergraduate course curriculum.Special remarks were given by 15 interns. Five of them remarked that this method gave them an opportunity for receiving hands on training which was lacking earlier. The perception among 7 interns was that they would be able to perform the visual assessment but they failed when faced with the patients. Two interns said they liked the DOAP session as there was a hands-on experience for all. One intern remarked that it was the most interesting way of learning.

Soft Skills

The soft skills of the interns under study were found to be completely lacking, during the Pretest. None of the interns introduced themselves nor took time to communicate and explain the procedure of the test, to the patient. However, after the DOAP session, all the interns (100 %) introduced themselves to the patient and explained the procedure to him before performing the tests.
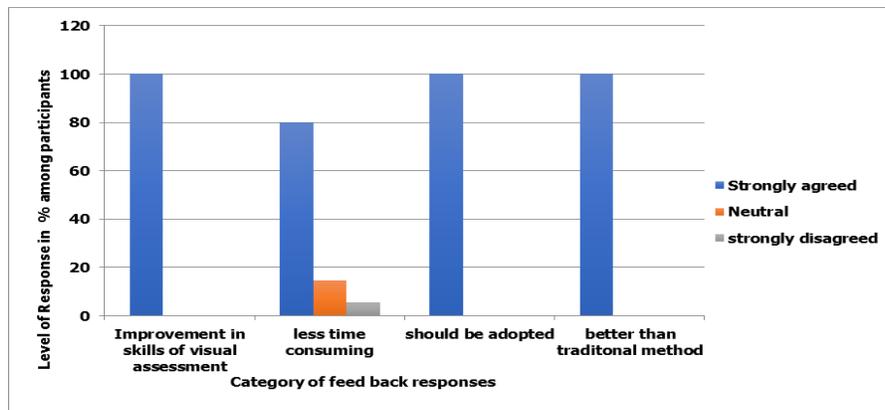

Fig 2: Feedback from Participants on Educational Intervention

Discussion

The primary objective of the present study was to find out if the medical students graduating from our university and doing internship were competent enough to perform the task of visual assessment of a patient. In our study we found that the majority (> 75 %) could not carry out the visual assessment satisfactorily. Our findings were similar to a study by Eze et al, they found that medical interns in Enugu, south-eastern Nigeria had crucial gaps in their undergraduate ophthalmic clinical skills and diagnostic competencies.[8] Similarly in a study done by Jason Noble et al in Canada, it was found that undergraduate ophthalmology education was non-standardized and gaps existed in the knowledge and skill sets of residents in core areas.[9] In our study it was observed during the pretest that interns lacked soft skills also. In the traditional way of teaching, attitude and

communication were not specifically addressed. These values were picked up by the interns along the way, by observing their peers in an apprenticeship way of learning, which however was not uniform. Divya et al, in their study in a medical college in South India, found that in the current traditional teaching, the medical students received greater amount of ophthalmology instruction as compared to ICO (International Council of Ophthalmology)task force recommendations, when they assessed the adequacy of ophthalmology teaching among third year students. Also, in comparison with the MCI recommendations, medical students received a satisfactory number of hours of both classroom and clinic-based instructions.[10] In spite of adequate instructions and time, the students were found to be lacking in the required clinical skills. This suggests that our focus should shift from 'what to teach' to 'how best to teach'. Also, clear expectations, of what is required from the student, are critical for effective learning.[11] Learning under real clinical settings, remains the gold standard for establishing sound grounding knowledge in ophthalmology.[12] The challenge during the shift from traditional to the new competency-based curriculum, is the development and testing of tools to both teach, as well as assess, the defined competencies.The secondary objective of this study was to provide information on effectiveness and acceptance of the DOAP method of teaching learning which is a part of the new revised undergraduate CBME Curriculum of India. There was significant improvement in the performance of all the interns after the DOAP session. In the post test scores improvement in the visual assessment skill, was statistically significant ($P<0.001$) for all the components of the testing (Table-1). Similarly, remarkable improvement was noted in soft skills of all the interns. The scores for the soft skills such as introducing themselves and explaining the procedure to the patient improved from 0 % to 100 % following the intervention.This strongly suggests that the DOAP session is an effective teaching learning method.Tony Succar et al, in their study on CBME, concluded that the competency-based curriculum cohort demonstrated and retained higher knowledge acquisition than previous graduates from content-based curriculum and their 12-month retention data perhaps provides evidence of less loss of knowledge with the new CBME curriculum. A solid grounded learning in a real-life situation during curriculum teaching could help in better retention of knowledge.On analyzing the feedback responses on DOAP as a teaching learning method for undergraduate teaching there was an overwhelming response of agreement in that, this was a better way of learning the skill of visual assessment and should be used in the undergraduate curriculum. The majority agreed that it was a less time consuming and a hands-on teaching method.

Limitations & Strengths

This study was conducted on interns who had already undergone teaching in the traditional way. Effectiveness of the teaching learning method was assessed after a period of two months only. To ascertain if long term retention of this knowledge is better with a DOAP session further studies have to be done.

This study re-emphasizes those traditional methods are not enough and competency oriented, real life situation-based teaching and learning methods are more effective for clinical skill development such as visual assessment.

Conclusion

Visual assessment is a basic and core skill necessary for the primary care medical practitioners. Significant short comings were found in the skills of visual assessment among the interns who had undergone

Conflict of Interest: Nil Source of support:Nil

training through traditional methods and therefore a need for an alternate better way to teach was felt. A DOAP session as a teaching learning method was found to be effective and well accepted by the learners. They found it easy to follow and understood the test better. The majority agreed that it was less time consuming and provided real life situational training. Therefore, DOAP method of teaching would help realize the goal of achieving competent graduates, who are good at visual assessment and have the appropriate soft skills.

Acknowledgement

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