

## DIRECT OBSERVATION OF PROCEDURAL SKILLS (DOPS) VERSUS TRADITIONAL ASSESSMENT METHOD FOR NASOGASTRIC TUBE INSERTION SKILL

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### ABSTRACT

#### BACKGROUND

The mantra of a good medical teaching-learning process is "Assessment Drives Learning." At present many practical bedside skills of medical students (interns) are taken for granted and assessed in a cursory traditional way. By using DOPS- Direct Observation of Procedural Skills as a method of assessment, the proficiency and competency of interns in bedside procedures can be graded and this will help them to become more perfect and confident in performing the skill. The present study has been conducted to compare the traditional assessment method with Direct Observation of Procedural Skills (DOPS) to assess the skill of medical interns in insertion of a nasogastric tube.

The objectives of this study were- to assess interns' skill in insertion of a nasogastric tube by the traditional assessment method and also by a series of Direct Observation of Procedural Skills (DOPS) method and 2. to identify the more effective method of assessment.

#### MATERIALS AND METHODS

40 interns posted in the department of Internal Medicine, KIMS, Hubballi, were assessed by while performing the procedure of insertion of a nasogastric tube in the emergency ward (casualty) by the two methods of assessment, over a period of three months.

#### RESULTS

Interns assessed by the traditional method had a wide range of scores, whereas interns assessed by the Direct Observation of Procedural Skills (DOPS) method showed a consistent improvement in the serial assessments.

#### CONCLUSION

Direct Observation of Procedural Skills (DOPS) is a very effective method to assess all the domains of learning including cognitive, affective and psychomotor skills of interns while performing a bedside procedure and is a better method compared to the traditional method as it gives a feedback to the performers to help to improve at all levels of the skill, which is substantiated by statistical analysis.

#### KEYWORDS

Direct Observation of Procedural Skills (DOPS), Traditional Assessment Method.

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#### BACKGROUND

In medical college hospitals in India, interns who are posted to emergency wards/casualty are expected to perform routine procedures like insertion of nasogastric tube in a large group of patients who are admitted with poisoning, drug overdose, coma due to stroke etc.

Thought patient care is taught in bedside teaching as an integral and essential part of the teaching methodology for medical students in the department of Internal Medicine, an age-old protocol based on the clinical textbooks is followed. The students are taught how to take a thorough history and examine the patients systemically and systematically. Case-discussions are conducted by the teachers and the theoretical and bedside knowledge of the students is assessed and honed. Therapeutic aspect of the patient care is limited to a short oral discussion on what investigations and procedures need to be done and what treatment needs to be implemented. The students hardly get to observe the procedures of investigation and treatment. When these students begin internship, they are suddenly expected to know these procedures and are forced to learn the methods by trial and error under the guidance of post-

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graduate students. Also, the skills of the intern are taken for granted and not systematically assessed.

By reinforcing the skill in them by using a four-step technique and using DOPS (Direct Observation of Procedural skills) method to assess the intern, the proficiency and competency of the intern can be graded and will help them to become more competent and confident.

Many changes are being implemented by the Medical Council of India with a view to update and improve teaching-learning methods for medical students. An integral part of this process is to inculcate and include newer and better assessment/examination methods which help to achieve the long term goals in a more effective way.

## MATERIALS AND METHODS

40 interns posted in the department of Internal Medicine, KIMS, Hubballi were assessed by while performing the procedure of insertion of a nasogastric tube in the emergency ward (casualty) by the two methods of assessment over a period of three months.

The participants were given a pre-evaluation questionnaire and 20 interns were directly assessed by the traditional assessment method while performing the procedure. The procedure technique of inserting the nasogastric tube was reinforced to the other group of 20 interns using a four-step method of demonstration, deconstruction, comprehension and execution. The procedure was first demonstrated to them as a continuous process; then it was broken down into individual steps and described; in the third step, the participant enumerated the steps as the demonstrator performed them and lastly, the participants independently performed the procedure. These participants were familiarized with the DOPS form of assessment and with its checklist, which included all the steps right from taking a proper consent, using proper aseptic measures, up to post-procedure management, including patient reassurances and confirming the success of the procedure. They were then serially assessed using DOPS on three different occasions by three different assessors. Both the group of participants were then given a detailed feedback by the assessors and also a post-evaluation questionnaire.

Chi-square test was used as test of significance for data. Independent t test was used as test of significance to identify the mean difference between two variables.

## RESULTS

The first (traditional method) group of participants performed the procedure silently as they had learnt it on their own by observing their peers and seniors. These Interns assessed by the traditional method had a wide range of scores, as they were not aware of performing the procedure in a systematic and step-wise way and also because they was no specific checklist to grade them, their scores were the discretion of the assessor with a lot of chance for bias in marking.

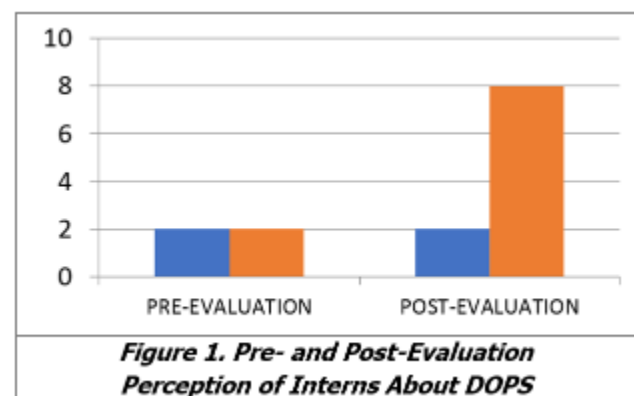
Since the other group (DOPS method) of participants had undergone reinforcement with a four-step technique and had been familiarized with the checklist in the Direct Observation of Procedural Skills (DOPS) format of assessment, they were more systematic in doing the procedure. Moreover, since they received a constructive feedback post-procedure, as a part of the DOPS method, they could consistently improve on their skill and achieve better perfection in subsequent assessments.

|                    | <b>I<br/>Evaluation</b> | <b>II<br/>Evaluation</b> | <b>III<br/>Evaluation</b> |
|--------------------|-------------------------|--------------------------|---------------------------|
| Traditional Method | 5 – 8                   | --                       | --                        |
| DOPS               | 5 – 14                  | 15 – 24                  | 25 – 34                   |

**Table 1. Scores on Evaluation of The Procedure**

The p value (of <0.0001) was considered as statistically significant after assuming all the rules of statistical tests.

The first group of participants showed no changes in their pre-test and post-test self-evaluation questionnaires and were unsure about the competency of their skill. The second (DOPS) group of participants showed a significant improvement in their post-evaluation questionnaire. The observation was that assessment by DOPS not only improved their skill, but also built up their confidence and competency.



## DISCUSSION

Learning is a continuous and life long process. Especially a medical graduate needs to be as perfect and confident as possible in performing regular medical procedures. The present Indian medical curriculum has very little scope tech bedside procedures in real-time situations. Moreover, as Assessment drives learning, there is a need for constructive and systematic assessment of all bedside skills, so that, they can be perfected with an effective feedback after the assessment.

In the DOPS method of assessment, there is a direct observation of the performance which makes a difference in a systematic way, which is lacking in the traditional and age-old methods of assessment. Also, since the one-year period of internship is a part of the learning process, this is the time

where such bedside skills can be taught, assessed and perfected. Since the interns already have a certificate of passing the required exam and are considered qualified to perform real-time procedures on live patients, ethical matters about performing the procedures also do not arise. So, instead of leaving the interns on their own to familiarize themselves with these skills, the entire period can be utilized by the teachers to teach, monitor and assess the graduates, when they are performing the procedures.

Tejinder Singh et al stated that direct observation of performance helps in generating high quality real-time feedback, which is more authentic.<sup>1</sup> This study presented strengths of DOPS as compared to the drawbacks of the traditional method of assessment. Erfani Khanghahi M et al also concluded that training impacts on participants, performance of participants, and quality of conducting the tests are the factors which can be effectively assessed using DOPS.<sup>2</sup> Farajpour, Arezou suggested that according to the compliance of DOPS method with the performance objectives of medical curriculum and students' and assessors' viewpoints regarding its acceptability, feasibility, and educational impact in the existing clinical centers, as well as their satisfaction with this method, it is recommended to assess senior medical students' clinical performance using this method.<sup>3</sup> It was clearly brought out in our study that the performance of the participants improves exponentially in serial tests. Profanter, Christoph & Perathoner, Alexander also similarly recommended that DOPS should be considered as preferred assessment tool in a student's skills-lab. The approximation of performance-rates within the months after initial superiority of DOPS could be explained by an interaction between DOPS and tutor system: DOPS elements seem to have improved tutoring and performance rates as well. DOPS in students' skills-lab afford structured feedback and assessment without increased personnel and financial resources compared to classic small group training.<sup>4</sup> Each individual DOPS was completed in less than 15 minutes. In the study by Morris A et al also, all participants provided positive comments about the feedbacks received from the clinical skills facilitators (CSFs). Results showed that DOPS assessment may be used as a successful tool in the assessment of preregistration house officers in hospital environment.<sup>5</sup> Scott DJ et al showed that trained group had significantly better performance than control group based on the assessment through direct observation ( $P = 0.02$ ) compared to video tape assessment (NS). DOPS showed improved performance of participants after formal skills training on a video trainer.<sup>6</sup> Our study showed a consistent improvement in the competence of the participants which was similar to the study by Keith Siau, Paul Dunckley et al whose study substantiated that the new DOPS was superior

in characterizing the endoscopy learning curve by demonstrating progression of competent scores across quartiles of procedural experience.<sup>7</sup> The feedback given at the end of each assessment added quality to the skill as also stated by Amin R R et al in their article where they stated that they consider feedback an important learning tool for students and agree that providing student's feedback can improve their abilities to perform clinical skills.<sup>8</sup> The importance of feedback was also cited by McKenzie S et al.<sup>9</sup> and by Srinivasan M et al.<sup>10</sup> All these prove that DOPS is a very effective method. Holmboe E et al stated that Direct observation of competence training, a new multifaceted approach to faculty development, leads to meaningful changes in rating behaviours and in faculty comfort with evaluation of clinical skills.<sup>11</sup> The participants voluntarily expressed the improvement in their confidence in performing the procedure, in the post-evaluation questionnaires. Chen W et al confirmed that many medical students have not been directly observed in clinical training; and that those who were observed more often, expressed more self-reported confidence. Some assessment measures, which focus on direct observation and feedback during student-patient encounters, may improve the students' confidence.<sup>12</sup>

Hence, DOPS as an assessment is ideal for assessing procedural skills in medical students with multiple advantages.

## CONCLUSION

Direct Observation of Procedural Skills (DOPS) is a very effective method to assess all the domains of learning including cognitive, affective and psychomotor skills of interns while performing a bedside procedure and is a better method compared to the traditional method as it gives a feedback to the performers to help them improve at all levels of the skill, which is substantiated by statistical analysis.

Direct Observation of Procedural Skills (DOPS) is an ideal assessment tool to evaluate and improve the bedside procedural skills of interns and it needs to be incorporated in the curriculum. The Medical Council of India has already established its Vision and has implemented great changes in the process of training medical students in India. The aim is to make each student achieve adequate knowledge and skills to be at par with any medical graduate anywhere in the world. From 2019 competency-based medical education is already set to become a reality with multiple alterations and improvements to be inculcated into the Indian Medical curriculum. This study reinforces the fact that by including assessment methods like DOPS in the curriculum, the competency of the Indian Medical Graduates can definitely be taking a positive step forward.

## DOPS FORM FOR NASOGASTRIC TUBE INSERTION SKILL

|                                  |  |  |  |  |  |  |  |  |  |   |   |    |  |  |  |  |  |  |  |  |
|----------------------------------|--|--|--|--|--|--|--|--|--|---|---|----|--|--|--|--|--|--|--|--|
| Forename:                        |  |  |  |  |  |  |  |  |  |   |   |    |  |  |  |  |  |  |  |  |
| Trainee's Surname:               |  |  |  |  |  |  |  |  |  |   |   |    |  |  |  |  |  |  |  |  |
| Trainee's GMC:                   |  |  |  |  |  |  |  |  |  |   |   |    |  |  |  |  |  |  |  |  |
| Date of Assessment (dd/mm/yyyy): |  |  |  |  |  |  |  |  |  | / | / | 20 |  |  |  |  |  |  |  |  |

| Domain & Comments                                                                           | Satisfactory             | Needs Improvement        | GRADES ( 1 TO 5 )<br>1: very poor, 2 : poor, 3 : average, 4: good, 5 : very good |
|---------------------------------------------------------------------------------------------|--------------------------|--------------------------|----------------------------------------------------------------------------------|
| Professional Approach (to include communication, consent and consideration of the patient.) | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Knowledge (indication, anatomy, technique).                                                 | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Demonstrate appropriate preparation pre-procedure                                           | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Appropriate analgesia or sedation                                                           | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Technical Ability                                                                           | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Aseptic Technique                                                                           | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |
| Post Procedure Management                                                                   | <input type="checkbox"/> | <input type="checkbox"/> |                                                                                  |

Total score =

|                                      |                                                               |                                                                         |                                                 |
|--------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------|
| Overall Ability to perform Procedure | Competent to perform unsupervised<br><input type="checkbox"/> | May need supervision if complications arise<br><input type="checkbox"/> | Needs more practice<br><input type="checkbox"/> |
| Comments:                            |                                                               |                                                                         |                                                 |

Assessor's position:

Consultant ☐ Resident ☐

Time taken for

Feedback & Observation (in minutes)

|                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Assessor's Surname:         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Assessor's Registration No. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Assessor's Signature:       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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