e-ISSN: 2722-3558

Sriwijaya Journal of Surgery

[SJS]

https://sriwijayasurgery.com

Analysis of Clinical Skill Performance During Medical Internship at Department of Surgery, Debre Tabor University, Ethiopia

Yalew Hasen[1*], Aderajew Mequanint[1], Tewodros Teshome[1], Amsalu Belete[1], Derso Bekele[1]

[1]Department of Surgery, Debre Tabor University, Debre Tabor, Ethiopia

ARTICLE INFO

Received: December 12, 2023;
Accepted: February 13, 2024;
Published: April 1, 2024.

Keywords:
Assessment
Medical interns
Medical students
Surgical skill
Performance

***Corresponding author:** Yalew Hasen

E-mail address: *yalewhassen@gmail.com*

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/sjs.v7i1.100

A B S T R A C T

Introduction: Direct observation of procedural skill (DOPS) is a method of assessing a trainee's performance in a work setting. It involves a supervisor monitoring the trainee while they carry out a procedural skill using a structured checklist. This study aimed to investigate the perceptions and levels of satisfaction among medical interns and their assessors during their surgical clinical attachments at the Department of Surgery, Debre Tabor University, Ethiopia. **Methods:** The research was based on the steps of an action research project. The test includes basic surgery procedures like securing a peripheral IV line and drawing blood for testing, as well as skills like suturing and knot tying, putting in a nasogastric tube (NGT), and putting in a trans-urethral urinary catheter. The data gathering instruments used were self-administered, semi-structured questionnaires for both interns and their evaluators. After the implementation of the DOPS interventions, the questionnaire was distributed to both students and instructors. The data were analyzed using SPSS version 26.0 software, calculating frequency and percentage values for comparison. **Results:** Most of participants believe that DOPS has the potential to enhance the objectivity of assessing students' skills. The majority of participants strongly agreed that DOPS enhances the relationship between students and teachers, provides valuable feedback to medical interns, should continue in other departments in the future, and is an effective teaching and learning tool. The DOPS performance showed a significant improvement between the first and second assessments in all four procedures. **Conclusion:** DOPS can serve as a standard tool for assessing fundamental practical abilities in the surgical fields. Given that action research involves a paradigm shift and necessitates ongoing reflection and improvement, it is advisable to conduct additional studies to evaluate the performance of interns in all other departments.

1. Introduction

In medical school institutes, the term "intern doctor" is used to refer to a "pre-physician." In the commonly accepted sense, it refers to students who engage in a year-long service at a hospital to gain fundamental information and skills prior to completing their medical education. The internship year is a crucial component of the transition from medical school to becoming an independent general practitioner or specialist. It primarily involves hands-on training under the guidance of experienced colleagues, who offer support, feedback, instruction, and evaluation to the trainees.[1,2]

The academic performance of medical students is crucial for the success of the educational process. The evaluation of medical students is a complex procedure characterized by medical schools frequently modifying the assessment approach. Evaluating clinical skills is significantly more crucial and intricate since it directly correlates with the provision of patient care. Direct observation of procedural skills (DOPS), mini-clinical evaluation exercises (mini-CEX), and case-based discussion (CBD) are often employed in workplace-based evaluation approaches.[3-5] Workplace-based assessments evaluate the performance of trainees in their work environment. Unlike many other

evaluations in medical education, these assessments are not conducted in artificial environments but rather occur as part of the regular job routine.[6]

DOPS are intended to assess the execution of a certain talent in the workplace rather than evaluating the individual. They aim to verify that the skill is performed accurately, following established criteria, and utilizing a predetermined checklist. In DOPS, the trainee's evaluation is based on their demonstrated comprehension of indications, relevant anatomy, procedural technique, obtaining informed consent, displaying appropriate pre-procedure preparation, technical proficiency, aseptic technique, seeking assistance when necessary, post-procedure management, communication skills, consideration of patient welfare and professionalism, and overall proficiency in performing the procedure with a real patient encounter.[7-9] The objective of this study was to implement DOPS as a method for assessing the clinical skills performance of medical interns. The study also aimed to investigate the opinions and satisfaction levels of both medical interns and their assessors during their surgical clinical attachments at the Department of Surgery, Debre Tabor University, in Debre Tabor, Ethiopia.

2. Methods

The study focused on final-year medical students, also known as medical interns, who were assigned to the Department of Surgery for their fourth rotation during the academic year 2023. The study also included their teachers throughout the fifth to tenth weeks of their attachment, which took place from April to May 2023. The registrar office at Debre Tabor University reports that there are 44 registered final-year medical students. Out of the total, 12 students were interning at the department of surgery during their fourth rotation. Consequently, the study included 12 medical interns and 8 assessors, who were a combination of general practitioners and consultants.

The research was based on the steps of an action research project. The test includes basic surgery procedures like securing a peripheral IV line and drawing blood for testing, as well as skills like suturing and knot tying, putting in a nasogastric tube (NGT), and putting in a trans-urethral urinary catheter. Experts from the department of surgery and other fields of medical education agreed on the methods. Many treatments take less than 20 minutes to complete. The assessors used a structured, standardized checklist for each process to aid in the assessment. As a way to make sure the checklist was true, the department of surgery reviewed and agreed with its contents. The evaluation did not just look at the method; it also looked at information, consent, preparation, vigilance, infection control, technical skill, interaction with patients, insight, documentation, and teamwork. Both general practitioners and consultants in the surgery area conducted the evaluation. We trained the evaluators by watching medical interns perform procedures (DOPS). We conducted the training to ensure that the individuals grading the students adhered to uniform standards.

All medical interns and assessors received training on standard procedures. The introduction and evaluation happened while the intern was doing their normal work. Two assessors, who used direct observation of procedural skills (DOPS) developed for each procedure, watched each student as they performed at least two procedures, one before and one after receiving feedback. The test consisted of three levels: 0 denoted complete failure, 1 indicated partial failure, and 2 indicated satisfactory completion. Using the checklist as a guide, the medical interns received specific verbal and written comments about their performance after the test. This way, the students can figure out their strengths, weaknesses, and areas where they can improve. The last process required a score of at least 60% to pass. If the intern's performance is below the acceptable range (below 60%) on the second test (after getting feedback), they will have to do the process again. They added the outcome to their portfolio to demonstrate their proficiency in the surgery area. It was possible to tell the difference

between scores before and after the change. A five-point Likert scale was used to rate how the interns and evaluators felt: strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree.

The data gathering instruments used were self-administered, semi-structured questionnaires for both interns and their evaluators. After the implementation of the DOPS interventions, the questionnaire was distributed to both students and instructors. The questionnaire included several statements pertaining to the application, perceptions, experiences, degrees of satisfaction, perceived limitations of using DOPS as a teaching-learning tool, and the possibility of incorporating it into normal work. Comprehensive informed consent was obtained, and the study procedure was thoroughly explained to each participant, providing them with a complete justification. The data were analyzed using SPSS version 26.0 software, calculating frequency and percentage values for comparison.

3. Results

The participants consisted of 8 assessors, comprising 3 consultants and 5 general practitioners, as well as 12 medical interns. The average age of the participants was 28 years, with a standard deviation of 3.7. The youngest participant was 22 years old, while the oldest participant was 35 years old. The number of male participants was almost double that of female participants, with a male-to-female ratio of 1.9:1 (Table 1).

Table 1. Sociodemographic characteristics.

Variables	**Group**		**Frequency (n), percentage (%)**
Age (years)	20-25		7 (35)
	26-30		9 (45)
	31-35		4 (20)
	Total		20 (100)
Gender	Male		13 (65.0)
	Female		7 (35.0)
	Total		20 (100)
Roles	Students (medical interns)		12 (60.0)
	Assessors	General practitioner	5 (25.0)
		Consultants	3 (15.0)

The study found that the main reasons for not regularly conducting DOPS as a workplace assessment, as reported by participants, were assessors experiencing job overload or time restrictions (40%), lack of awareness or training (25%), and a combination of both factors (20%). Approximately 90% of interns and their teachers believe that DOPS (Direct Observation of Procedural Skills) has the potential to enhance the objectivity of assessing students' skills. Table 2 reveals that the majority of participants strongly agreed that DOPS enhances the relationship between students and teachers, provides valuable feedback to medical interns, should continue in other departments in the future, and is an effective teaching and learning tool.

Table 2. Perceptions of participants about DOPS.

Variables	Responses					
	Strongly disagree, n (%)	**Disagree, n (%)**	**Neither, n (%)**	**Agree, n (%)**	**Strongly agree, n (%)**	**Mean (SD)**
DOPS is simple to use	0 (0.0)	3 (15.0)	5 (25.0)	5(25.0)	7 (35.0)	3.80 (1.1)
DOPS is easy to use for assessors and interns to administer	0 (0.0)	2(10)	3(15.0)	5(25.0)	10 (50)	4.15(1.0)
DOPS assessment can be incorporated into the fabric of regular & routine interns' procedural skill assessment	1 (5)	1 (5)	4 (20)	10 (50	4 (20)	3.75(1.0)
There is sufficient time for assessors to observe medical interns performing skills using DOPS Methods.	2(10)	2(10)	4 (20)	6 (30)	6 (30)	3.60 (1.3)
The time given for feedback was adequate	2(10)	2(10)	5 (25.0)	7(35)	4 (20)	3.45(1.2)
DOPS creates an opportunity for pertinent feedback to a medical intern	0 (0.0)	1 (5)	1 (5)	7(35)	11(55)	4.40(0.8)
DOPS improves student-teacher relationship	0 (0.0)	1 (5)	1 (5)	7(35)	11(55)	4.40(0.8)
DOPS is an effective teaching-learning tool	0 (0.0)	3(15.0)	0 (0.0)	5(25.0)	12(60)	4.30(1.1)
DOPS should be continued in the future in other departments	1 (5)	0 (0.0)	2(10)	6 (30)	11(55)	4.30(1.0)

Table 3. Pre-DOPS and post-DOPS performance of the medical intern.

No	Basic procedure		Pre-DOPS performance (%)	Post-DOPS performance (%)
1	Securing IV line and taking blood for sample	Maximum	85.00	96.00
		Minimum	65.00	80.00
		Mean	73.5	87.33
		Total of interns assessed	6	6
2	Suturing and knot-tying	Maximum	59.00	97.00
		Minimum	44.00	85.00
		Mean	49.00	94.50
		Total of interns assessed	6	6
3	NG tube insertion	Maximum	69.00	78.00
		Minimum	61.00	72.00
		Mean	66.33	76.00
		Total of interns assessed	3	3
4	Trans-urethral catheterization	Maximum	82.00	94.00
		Minimum	80.00	90.00
		Mean	81.00	92.00
		Total of interns assessed	2	2

The DOPS ratings for procedural skills involved the evaluation of interns on four specific procedures during their surgery rotation. These procedures included securing an IV line and taking a blood sample, suturing, and knot tying, NG tube insertion, and trans-urethral catheterization. In total, four checklists were prepared for this purpose. Following the conclusion of the last DOPS performance, feedback from both interns and professors was promptly collected. The performance of DOPS-1 was regarded as a sort of formative assessment. Consequently, the students were provided with the results of the DOPS-1 examination. After a week of practice and procedure correction, the DOPS-2 evaluation was conducted for the pupils. However, the DOPS-2 findings will be incorporated into their portfolio as proof of the

student's performance in the surgery department, serving as a conclusive judgment of whether they passed or failed. Interns who receive a score below 60% must retake the procedure until they achieve a passing grade.

Post-DOPS intervention assessment: Twelve medical interns successfully performed two procedures each, as outlined in one or more of the four checklists or procedures. We reported the results as 100%. The lowest and highest average scores recorded during the pre-DOPS exam were in suturing and knot tying (49.0%) and trans-urethral catheterization (81.0%), respectively. During the post-DOPS performance, the success rate for NG tube insertion was 76.0%, while the success rate for suturing and knot tying was 94.50%. The DOPS performance showed a significant improvement between the first and second assessments in all four operations, regardless of their nature. Therefore, the average DOPS score increased from DOPS-1 to DOPS-2, as indicated in Table 3.

4. Discussion

The Directly Observed Procedural Abilities (DOPS) assessment is a workplace-based evaluation that is specifically developed to assess clinical abilities and offer feedback. Due to its reliance on firsthand observation of trainees doing procedures in real-life scenarios, this method is highly effective for evaluating the practical skills of trainees and providing them with constructive feedback to enhance their performance.[10-12]

Given that the practice of medicine encompasses various elements such as knowledge, procedural skills, communication skills, and clinical decision-making, it is essential to employ suitable assessment methodologies to assure the training of competent and skilled doctors.[13,14] After implementing the direct observation of procedural abilities (DOPS) exercise in the Department of Surgery, we observed a notable enhancement in the clinical abilities of interns. This increase was achieved through the introduction and repetition of DOPS for common surgical procedures. Furthermore, both the students and teachers responded positively to this method. Another discovery made in this study is that medical interns and their trainers perceived the DOPS assessment as an impartial and valuable evaluation tool within the Department of Surgery. The results also indicated that medical interns and department personnel provided favorable feedback regarding DOPS.

Medical interns and department personnel provided favorable feedback regarding the direct observation of procedural skills in this study. Similarly, previous research found DOPS to be user-friendly and straightforward to use. The students expressed a high level of positivity regarding the feedback opportunity provided by DOPS for medical students. Our study also discovered a correlation between the implementation of progressive DOPS procedures and an enhancement in trainees' performance, as many similar studies yielded equivalent results.[15-18]

Moreover, the participants of this study encountered significant obstacles in implementing this assessment approach, such as a lack of awareness and excessive workloads. This finding aligns with other research that has demonstrated comparable feedback mechanisms. Similar to prior studies, this study also found that DOPS satisfaction and practicality were regarded as favorable.[19,20] However, our study has several limitations. Firstly, the assessment was conducted in a single center, which may limit the generalizability of the findings. Additionally, the sample size was small, which may affect the statistical power of the study. Lastly, the investigation was only conducted in a single department, which may limit the applicability of the results to other departments or settings. Therefore, additional research is necessary with a larger sample size of participants.

5. Conclusion

DOPS can serve as a standard tool for assessing fundamental practical abilities in the surgical field. Given that action research involves a paradigm shift

and necessitates ongoing reflection and improvement, it is advisable to conduct additional studies to evaluate the performance of interns in all other departments.

6. References

1. Lagoo JY, Joshi SB. Introduction of direct observation of procedural skills (DOPS) as a formative assessment tool during postgraduate training in anaesthesiology: exploration of perceptions. Indian J Anaesth. 2021; 65(3): 202-9.
2. Boker A. Toward competency-based curriculum: Application of workplace-based assessment tools in the National Saudi Arabian Anesthesia Training Program. Saudi J Anaesth. 2016; 10: 417–22.
3. Bansal M. Introduction of directly observed procedural skills (DOPS) as a part of competency-based medical education in Otorhinolaryngology. Indian J Otolaryngol Head Neck Surg. 2019; 71: 161–6.
4. Singh G, Kaur R, Mahajan A, Thomas AM, Singh T. Piloting direct observation of procedural skills in dental education in India. Int J Appl Basic Med Res. 2017; 7: 239–42.
5. Khanghahi ME, Azar FE. Direct observation of procedural skills (DOPS) evaluation method: Systematic review of evidence. Med J Islam Repub Iran. 2018; 32: 254–61.
6. Profanter C, Perathoner A. DOPS (direct observation of procedural skills) in undergraduate skills-lab: Does it work? Analysis of skills-performance and curricular side effects. GMS Z Med Ausbild. 2015; 32: 1–14.
7. Sethi S, Badyal DK. Clinical procedural skills assessment during internship in ophthalmology. J Adv Med Educ Prof. 2019; 7: 56–61.
8. Farajpour A, Amini M, Pishbin E, Mostafavian Z, Farmad SA. Using modified direct observation of procedural skills (DOPS) to assess undergraduate medical students. J Adv Med Educ Prof. 2018; 6(3): 130-6.
9. Sethi S, Badyal DK. Clinical procedural skill assessment during internship in ophthalmology. J Adv Med Educ Prof. 2019; 7(2): 56-61.
10. Kumar N, Singh NK, Rudra S, Pathak S. Effect of formative evaluation using direct observation of procedural skills in assessment of postgraduate students of obstetrics and gynecology: Prospective study. JAMP. 2017; 5(1): 1–5.
11. Amini A, Shirzad F, Mohseni M, Elmi A. Designing Direct observation of procedural skills (DOPS) test for selective skills of orthopedic residents and evaluating its effects from their points of view. Res Dev Med Edu. 2015; 4(2): 147–52.
12. Lorwald AC, Lahner FM, Nouns ZM, Berendonk C, Norcini J, et al. The educational impact of mini-clinical evaluation exercise (Mini-CEX) and direct observation of procedural skills (DOPS) and its association with implementation: a systematic review and meta-analysis. PLoS One. 2018; 13(6): e0198009.
13. Cook DA, Lineberry M. Consequences validity evidence: evaluating the impact of educational assessments. Acad Med. 2016; 91(6): 785–95.
14. Castanelli DJ, Jowsey T, Chen Y, Weller JM. Perceptions of purpose, value, and process of the mini-clinical evaluation exercise in anesthesia training. Can J Anesth. 2016; 63(12): 1–12.
15. Balachandar G, Bhaskar M, Midhun MJ. Effectiveness of basic surgical skill development program among interns at tertiary care centre. J Coastal Life Med. 2023; 11(2): 375-83.
16. Semnani MN, Semnani AN, Semnani FN, Bijari B, Mohammadi Y. Assessing the clinical skills of intern and stagers in the department of obstetrics and gynecology using direct

observation of procedural skills (DOPS) method and satisfaction of learners and examiners. Future Med Educ J. 2017; 7(3): 14-7.

17. Kamat C, Todakar M, Patil M, Teli A. Changing trends in assessment: Effectiveness of direct observation of procedural skills (DOPS) as an assessment tool in anesthesiology postgraduate students. J Anaesth Clin Pharm. 2022; 38(2): 275-80.
18. Mbewe M, Mbewe N, Ngoma CM. Factors contributing to students satisfaction with direct observation of procedural skills in the school of nursing sciences at the University of Zambia. J Nurs Educ Pract. 2020; 10(9): 47-56.
19. Mehranfard S, Pelarak F, Mashalchi H, Kalani L, Masoudiyekta L. Efficacy of logbook as a clinical assessment: Using DOPS evaluation method. J Multidiscip Care. 2022; 11(4): 184-9.
20. Prediger S, Furstenberg S, Berberat PO, Kadmon M, Herendza S. Interprofessional assessment of medical students competences with an instrument suitable for physicians and nurses. BMC Med Educ. 2019; 19: 46.