

Effectiveness of Pre-Internship Training In Skill Development (Nasogastric Tube Insertion) For Medical Graduates-An Objective Assessment

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Abstract

Background Newly graduated medical students receive no specific training in bedside procedures prior to starting internship. Most are not confident in bedside procedures, lack self-efficacy and are not inclined to acquiring these, being more inclined to preparing for entrance examinations. The transition to practice is difficult. This project studies whether a training given before start of internship will improve their self-efficacy and help them to acquire these skills and do procedures better, by an objective assessment (Kirkpatrick's level 4), taking one such procedure of- Nasogastric Tube Insertion (NGT) for the study.

Method Study sample and setting –15 interns each of the last batch of 2014(untrained) and first batch of 2015(trained) who were posted in department of medicine successively during study period, were evaluated by DOPS(Direct Observation Of Procedural Skill) with a check list by observer during actual performance of procedure on patients. All (61) of 2015 batch were given training in NGT insertion before internship posting, and evaluated with pre-post questionnaire for self-rating of knowledge, perception of confidence and skill.

Study design- Experimental. Intervention done – training using Power Point and video demonstration in Nasogastric Tube Insertion.

Results The scores before and after training were analysed statistically with paired t test which was highly significant ($p < 0.000$). The comparison of actual performance was done in the untrained and trained group by statistical analysis of the average DOPS scores using nonparametric tests. This was also found to be highly significant.

Conclusions. This study concludes therefore that pre internship training helped the fresh graduates in improving their self-perceived confidence and skill as well as actual performance of NG insertion (Kirkpatrick's level 4). This can be translated to other skills as well. A further study with larger sample size and more skills can be done and a structured curriculum developed for new graduates at the commencement of internship to train them in bedside procedures to help in skill development and equip them for practice, resulting in improved patient care.

Keywords - assessment, bedside, internship, Kirkpatrick's level 3& 4, procedures, training,

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I. Introduction

The Medical Council of India describes internship as “a phase of training wherein a graduate is expected to conduct actual practice of medical and health care and acquire skills under supervision so that he/she may become capable of functioning independently”

A fresh graduate after internship is expected to practice as primary contact physician. Unlike in some of the developed countries there is no mandatory residency system here other than for post-graduation, nor are they members of any physician team during studentship. During rotations they see selected patients with various diseases in outpatient and inpatient settings. Presently therefore newly graduated medical students receive no specific training in bedside procedures prior to starting their internship except what they have learnt as undergraduate students.

In the hospital settings the responsibility for bedside procedures lies with the ward staff and medical officers. The intern, developing these skills depends on his/her inclination to acquire them and learn by observing residents and senior members of a team and doing it under their supervision. They have log books to record the procedures done which can be “observed, assisted or performed”

The specific objectives of internship training has been defined for each speciality. Simple bedside procedures like intravenous cannulation and fluid administration, Ryle's tube insertion, gastric lavage,

intramuscular, subcutaneous injections, conducting cardiopulmonary resuscitation urinary catheterisation, oxygen administration, ascetic, pleural taps lumbar puncture etc. are listed in medicine. Though Medical Council regulates that objective assessment should be used, most places the log submission is the sole criterion as objective assessment for interns as of now is not practical at all centres. But the mere numbers of these procedures “observed, assisted, performed” are not enough to judge how prepared an intern is to independently face a patient and do a bedside procedure

Main aim of internship program is to gain clinical experience. The interns are not prepared for transition to a primary care physician as reported in many studies which questions the conduct and practice of internship program.^[1] 91% of respondents to a questionnaire in Ireland reported that they were not prepared for all skills needed as an intern.^[2] Medical students have come to expect that being able to perform common bedside procedures is no longer expected or required for their residency training because many of these are now performed by ancillary hospital personnel.^[3] Performance of procedures is related to feeling of competency. The amount of skill learnt is related to enthusiasm of interns to do them. Obstacles to learning skill may be due to lack of opportunities for hands on experience as reported in a study.^[4] The relationship with seniors of the team is also a factor. At the commencement most interns lack confidence together with sense of fear that they are not adequately prepared.^[4]

Studies have attributed the poor quality of postgraduate students to wasted period of internship and residents entering post-graduation as untrained undergraduates.^[5] Review of literature shows numerous articles which attribute poor performance of interns to postgraduate entrance examinations.^[6] Our interns, as in other parts of India are more inclined to study for entrance examinations than to learn skills during their rotations.

Only one third of students get into postgraduate training courses. The primary care physician is the final step in difficult cases of bedside procedures in a peripheral set up. But it has been observed that most of the interns lack self confidence in doing these during rotations. It was observed that most students after completion of their two months compulsory training in medicine are still not confident in performing bedside procedures and most of them tend to shy away from an opportunity in wards. This has been observed in other parts of the world as well.^[4] One recognised educational goal is to improve student’s self-belief that they are capable of performing what is expected of them. Even though self-perceived assessment of competence may not always correlate with actual performance this is used along with measurement of observed competence for evaluation of curricular outcomes.^[3]

There is no assessment to find whether the interns on completion of their training period has actually acquired these skills or not. The training of interns is neither systematic nor consistent. Often the interns go through the program without any clear aims. It varies according to hospitals, according to each department in a same hospital and according to individual interns. Internship is one of the weakest limbs of the teaching programme.^[7] Very limited number of medical colleges in the government sector have skills labs for training students/ interns. If after internship they are expected to perform independently they have to acquire them during internship postings in the departments

In this project we are trying to find out whether a pre internship training in one such bedside procedure - i.e. Nasogastric tube (NG) insertion would increase their self-perceived and supervisor evaluated capabilities in acquiring the skill when compared to conventional learning in the wards.

Research Question

Does pre posting training in bedside procedures (NGT insertion) improve self-efficacy and objectively assessed acquisition of the skill during internship?

Objectives

1. To compare the improvement in knowledge, self-perceived confidence and skill in NGT insertion in experimental group before and after training. using SELF ASSESSMENT AND SCORING QUESTIONNAIRE
2. To assess the effectiveness of pre-posting training in NGT insertion in the experimental group by comparing with control group using DOPS SCORING by observer during actual performance in the wards (Kirkpatrick’s level 3 & 4)

Type of Study

Descriptive and experimental

II. Materials and Methods

The study was conducted in the medical inpatient wards. Prior IRB clearance was obtained. Fifteen interns of 2014 batch who were posted to medicine as their last posting in December and had already finished all

other postings including surgery were assessed in their skill for NGT insertion by observers(duty medical officers) while doing the procedure in the wards using DOPS SCORING witha CHECK LIST

The next new batch of interns of 2015 batch (61) were given training in NGT insertion using Ryle's tube, PPT presentation and demonstration videos. They were given a pre and post training questionnaire for evaluation of gain in knowledge and self-perceived confidence and skill.

The interns of the trained batch2015 who were then posted in medicine department as their first rotation (15) were then assessed during their posting period, in the skill for NGT insertion by observers (duty medical officers) during actual procedure in patients as for control group by DOPS SCORING with same check list.

QUESTIONNAIRE- had 10 questions 3 were related to knowledge and rest to self-perceived skill and confidence. The participants responded on a 5 point Likert scale and indicated the level of their own knowledge, perception of their skill and confidence levels pre and post training. The difference in the combined scores of all interns for each question was analysed for statistical significance using SSPS software

CHECK LIST FOR DOPS – had 15 items with a total score of 10 marks on a Likert type scale. The scores of the control group (2014) and experimental group (2015)were compared using SPSS using unpaired data tests.

III. Results

The analysis of pre and post training scores is shown in Table 1. There was significant increase in the mean scores for all questions in the questionnaire after the training session in the experimental group-Batch 2015

The DOPS Score of both control and experimental (Trained) group are shown in Figure - 1 and Table 2. There is significant increase in the trained group mean score which was 8.53 out of 10 while the control group had a mean score of only 5.13 out of 10. This was assessed by duty MOs who scored the procedure with scoring sheet, without the intern being aware of it, during the actual procedure in the wards (Kirkpatrick's level 3 assessment)

TABLE- 1 Mean Pre and Post Training Scores of Experimental Group (Batch 2015) of Questionnaire and Statistical Significance

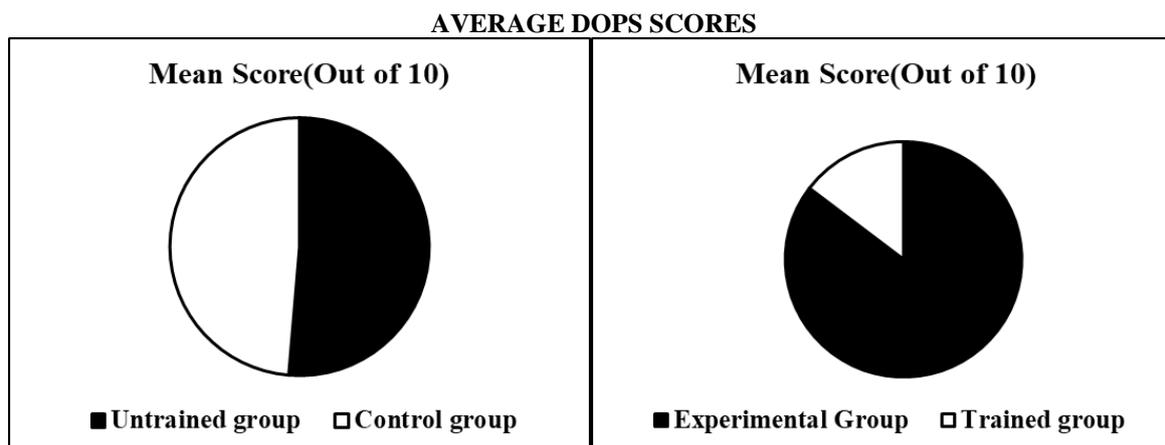
Batch 2015- Experimental Group		N=61 Interns									
		MEAN PRE AND POST TRAINING SCORES									
		Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10
Average Pre Training Score		3.0	2.4	2.5	1.5	1.7	2.3	2.1	2.1	2.6	2.6
Average Post Training Score		4.6	4.6	4.5	3.1	4.5	4.6	4.7	4.5	4.4	4.4
T Value		-14.900	-18.116	-15.705	-12.856	-23.260	-16.152	-17.310	-17.488	-12.067	-11.381
Sig (2-Tailed)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE- 2: Showing average scores and statistical significance of comparison of Control Group (Batch 2014- Untrained) and Experimental Group (Batch 2015- Trained)

		DOPS SCORES-OF CONTROL AND TRAINED GROUPS				
Group		N	Mean	Std. Deviation	Std. Error Mean	
DOPS Score	Untrained (control 2014)	15	5.1333	2.13363	.55090	
	Trained (experimental 2015)	15	8.5333	1.50555	.38873	

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
DOPS Score	Equal variances assumed	-5.043	28	.000	-3.40000	.67424
	Equal variances not assumed	-5.043	25.172	.000	-3.40000	.67424

Figure - 1: Depicting Average DOPS Scores in Control Group (Batch 2014 - Untrained) and Experimental Group (Batch 2015- Trained)



IV. Discussion

The objectives of this study was to find out if a training given in a procedural skill (NGT insertion) before internship would have any impact on the self-efficacy and preparedness of the interns for doing the procedure and whether this will be translated to a better performance in a ward based assessment and help them in acquiring this skill and if so to get objective evidence for the same-Kirkpatrick's- Level 4

The questionnaire used for self-assessment had total ten questions, three of these were related to knowledge regarding the procedure, seven to self-perceived ability regarding skill and behaviour. The results of pre and post training scores for each question shows a significant improvement in mean score for all the questions. The least score before training was for question regarding complications associated with the procedure which remained the least post training also despite a significantly improved one (1.5 to 3.1 out of 5) which is expected as dealing with actual complications only would give confidence to a person in handling them. But knowing, and learning how to deal with them has resulted in the improvement in post training score

The maximum gain in score was for question related to correct procedure which had a low pre training score (1.7) to post training (4.5) and the equipment required(2.3 to 4.7)which reflects the deficient knowledge about the procedure before training. This lack of knowledge about procedures in practical sense could be the reason for feeling of incompetency. Procedural performance correlates with feeling of competency^[9]Study by *Goelet al* showed how an orientation programme for interns significantly changed the intern's knowledge and attitude to patient care^[9]

The DOPS scoring had 15 check points(Y/N) and maximum score of 10 on Likert type scale. Taking consent, explaining the procedure and aseptic precautions were mandatory for a rating above 5.It was directly observed while the interns did the procedure in the wards as part of patient care. The control batch had a mean score of 5.13 and the trained group 8.53 out of 10. This was also highly significant ($p < 0.000$).In a study by *Dara etal* where a trainee intern year was introduced before actual internship the greatest improvement occurred in independent performance of procedural skills.^[8]

Our findings indicate that training given was very effective andhad a significant improvement on the actual performance of the interns which would ultimately benefit the patients. Most studies have used post training questionnaire for assessment. One study from Australia compared the self-reported confidence to observed competence for common clinical procedures in first year residency and found that there was no co relation of self-reported confidence to observed skill which varied among the study group being inadequate in some.^[10]Hence self-reported questionnaire assessment may not give a real picture regarding actual competence in skills. A skills training program, even with video presentation and demonstration with explanation can be useful in centres where skills lab is not available.

Limitation of our study was the small number of subjects and that only one skill was studied. But the evidence obtained is highly significant and can possibly be extrapolated to other skills as well. Further studies using more procedures in a larger study group can be done.

Introduction of a structured procedural skills training program with orientation program including all clinical departments before internship is therefore of help in motivating interns by increasing their self-efficacy and help them to learn, as well as do bedside procedures better, resulting in improved patient care.

V. Conclusion

Pre internship training in bedside procedures helps to increase the self-efficacy and performance skills of interns and helps in improving the quality of care received by hospitalised patients and would help in developing a better equipped primary care physician after completion of internship. The findings of this study affirm the need for a structured and systematic skills training for new medical graduates as reported by others in literature

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