Does Perception of Clinical Competency Correlate with Perception of Training Efficiency?

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Abstract

Background: The present teaching model for undergraduate medical students is predominantly followed by many medical schools in our sub-continent. With the intention of analyzing whether this method is appropriate for bring out a skillful future generation of doctors, we correlated the perception regarding usefulness of training parameters with the perception regarding competency to perform selective procedures among newly graduated doctors from our hospital.
Methods: We conducted a cross sectional descriptive survey research among 93 students immediately after completion of their internship during the year 2016. A set of statements were formulated regarding usefulness of training curriculum and competency to perform procedures. Students were asked to give their quantitative level of agreement on a 5-level Likert scale, depending on their perception. This data was used for a correlation analysis.
Results: Our analysis suggested that when the training was perceived to be effective, the perception of competency to perform selective procedures increased. Hence, a satisfactory training program may lead the way to enhance student competency to perform basic procedures during and after internship.
Conclusion: We conclude that proper skills training before graduation will definitely have an influence in the career of young medical graduates. Besides that, the present teaching model can be tailored to meet individual learning capacities for better yielding.
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Introduction

Most medical schools provide apprenticeship model training to students for developing skills and become competent in performing clinical procedures (1). This begins with class room demonstration followed by on site observation. Once the students become familiar with the procedure, they are expected to trial under supervision. However, this method may not offer sufficient exposure and experience to master procedural skills. This is because the apprenticeship model is inconsistent and dependent mainly on factors including teaching skill of the demonstrator, patient availability, a suitable environment for learning and varied learning capacities of individual students (1, 2). Some of the basic procedures that the students are expected to perform includes securing airway, support breathing, venipuncture, intravenous (IV) fluid administration, arterial puncture, cardio-pulmonary resuscitation (CPR), Foley's catheterization,

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nasogastric (NG) tube insertion, abdominal paracentesis, thoracentesis and central venous catheterization (3). There are studies which state that, not all students get adequate chance to practice or perform all these basic clinical procedures. In some circumstances, students do not have the opportunity to practice or even observe important procedures like abdominal paracentesis, thoracentesis and lumbar punctures (4, 5). This may have a long-term effect in the student's career.

A module based training curriculum is said to enhance the clinical skills of a student; however, individual strength and weakness in learning should be considered (5). In our institute, the foundation for skills training is laid down during undergraduate period by means of a basic skills training course including didactic lectures and procedural demonstrations at our skills lab. The next level of training is during the one year internship where each student follows a standard three-month rotation in departments including Medicine, General Surgery, Paediatrics and Obstetrics/ Gynaecology. This training structure is unanimous for all students irrespective of their individual learning capacity.

To analyze whether this teaching structure is appropriate, we conducted a survey research to assess student perception after satisfactory completion of internship and correlate findings with their perception regarding usefulness of training parameters.

Methods

A cross sectional descriptive survey research was designed to analyze the efficacy of the present apprenticeship training model for students, followed predominantly in most medical schools. We selected 93 students, immediately after completion of their internship during the year 2016. Only those students who did their undergraduate training and had satisfactorily completed their internship at our institute, without any extension, were selected for the study. Those students who received additional training, preferably from a Doctor in their family or those who attended additional skill development programs, apart from the routine internship program were excluded.

At our institute, the foremost concern was to train the student for providing life support. Hence, we start with a basic skill training course during undergraduate training, which includes mainly a practical session at the skills lab. During internship rotation, various procedures can be learnt based on availability of patients and interest of the student. Besides that, exposure to providing emergency life support will be a routine throughout internship irrespective of the department where the student is posted. Procedures were observed or practiced under direct supervision of a treating Doctor, but this was not tailored to individual learning capacities.

We identified some procedures as those which will make an essential foundation to develop further skills. These procedures were securing airway, support breathing, IV cannula insertion, CPR, urinary catheterization, NG tube insertion, wound suturing and filling of records. We formulated a set of statements (E.g. "I am competent in securing airway on my own", "I am competent in providing CPR") and asked the students to give their quantitative level of agreement on a 5-level Likert scale, depending on the perception of their competency to perform these procedures. We also asked the students to quantify their agreement towards usefulness of training parameters including the practical session during basic skill training at the skill lab and the hospital training during internship.

Each student had to enter his/her response to the statements and the responses were also given a score: strongly agree (5 points), agree (4 points), neutral (3 points), disagree (2 points) or strongly disagree (1 point). Collection of questionnaire responses was done on the same day. All collected data were tabulated for analysis. Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 20.0 (IBM Corp., Armonk, NY).

Correlation analysis was performed and Pearson's correlation coefficient was calculated to assess the strength of correlation between perception regarding training parameters and perception of competency to perform selective procedures. A "*p*" value of less than 0.05 was considered statistically significant. This study was approved by the ethical review board of our hospital and was performed as per the ethical standards of the 1964 declaration of Helsinki.

Results

A total of 93 students were selected based on our selection criteria and the assigned survey was conducted. All students completed the survey. Firstly, each student entered his/her level of agreement to eight statements regarding their perception of competency to perform selective procedures. All responses were collected and tabulated (Table 1). Overall Likert scale scores ranged between 3.5 and 4.3 (Mean=3.9). In addition, the mean Likert scale score obtained for each statement denoting a specific procedural skill was also noted (Table 1).

The same students responded with a level of agreement for two more statements regarding their perception about the efficacy of training parameters. This was tabulated separately and the corresponding mean Likert scale score for each of these two statements were noted (Table 2). We analyzed the linear dependence (correlation) between the student's perception regarding the efficacy of training parameters and their perception of competency to perform selective procedures. Findings were tabulated and the Pearson's correlation coefficient along with its statistical significance was calculated (Table 3).

Perception of an effective practical session at the skills lab was significantly correlated to the perception of competency to perform procedures including securing airway [r=0.28, P=0.006], CPR [r=0.22, P=0.04] and NG tube insertion [r=0.23, P=0.02]; but perception of competency to support breathing, IV cannula insertion, urinary catheterization, wound suturing and filing of records were not significantly correlated.

Perception of an effective hospital training was significantly correlated to perception of

Table 1: Quantitative level of agreement regarding perception of competency to perform selective procedures

Likert Scale	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean Likert's score
Support airways	25 (26.9%)	26 (28.0%)	14 (15.1%)	20 (21.5)	8 (8.6%)	3.4
Support breathing	47 (50.5)	34 (36.6%)	7 (7.5%)	2 (2.2%)	3 (3.3%)	4.2
*IV cannula insertion	45 (48.4%)	36 (38.7%)	9 (9.7%)	1 (1.1%)	2 (2.2%)	4.3
†CPR	31 (33.3%)	36 (38.7%)	19 (20.4%)	4 (4.3%)	3 (3.3%)	3.9
Urinary catheterization	35 (37.6%)	33 (35.5%)	17 (18.3%)	7 (7.5%)	1 (1.1%)	4.3
‡NG tube insertion	36 (38.7%)	29 (31.2%)	14 (15.1%)	10 (10.8%)	4 (4.3%)	3.5
Wound suturing	36 (38.7%)	34 (36.6%)	14 (15.1%)	7 (7.5%)	2 (2.2%)	3.6
Filling of records	21 (22.6%)	37 (39.8%)	22 (23.7%)	10 (10.8%)	3 (3.3%)	3.7

*IV: Intravenous; †CPR: Cardiopulmonary resuscitation; ‡NG: Nasogastric tube

Table 2: Quantitative level of agreement regarding perception of efficacy of training program

Likert Scale	Strongly agree	Agree	Neutral	disagree	Strongly disagree	Mean Likert's Score
Practical session in the skill lab	9 (9.7%)	26 (28.0%)	31 (33.3%)	18 (19.4%)	9 (9.7%)	3.08
Hospital training	23 (24.7%)	31 (33.3%)	19 (20.4%)	9 (9.7%)	11 (11.8%)	3.5

Table 3: Correlation Analysis

		Practical session in the skill lab	Hospital Training
Support airway	Pearson' *r	0.28	0.36
	†p	0.006*	0.0003*
Support breathing	Pearson' r	0.15	0.22
	P	0.14	0.03*
IV cannula insertion	Pearson' r	0.09	0.27
	P	0.35	0.01*
CPR	Pearson's r	0.22	0.33
	P	0.04*	0.001*
Urinary catheterization	Pearson' r	0.18	0.23
	P	0.09	0.02*
NG tube insertion	Pearson' r	0.23	0.32
	P	0.02*	0.002*
Wound suturing	Pearson' r	0.16	0.28
	P	0.12	0.006*
Filling of records	Pearson' r	0.09	0.20
	P	0.36	0.05

*r: Pearson's correlation coefficient; †p: Probability value (P<0.05, significant)

competency to perform all selected procedures including securing airway [r=0.36, P=0.0003], support breathing [r=0.22, P=0.03], IV cannula insertion [r=0.27, P=0.01], CPR [r=0.33, P=0.001], urinary catheterization [r=0.23, P=0.02], NG tube insertion [r=0.32, P=0.002] wound suturing [r=0.28, P=0.006], except for filling of records.

Our results suggest that when the training programs were perceived to be useful and effective, the perception of competency to perform selective procedures increase. Hence, student satisfaction of the training program should be considered as an important factor which may bring confidence among students to observe more and practice more. This may lead the way to enhance student competency to perform basic procedures during and after internship.

Discussion

Medical graduate's view or perception regarding the training provided and their competency to perform basic procedures represent the overall outcome of their learning process. Hence, by analyzing student's perception, valuable information can be obtained which may streamline the teaching curriculum. Kern et al, were the first ones who suggested the use of such information collected from the former trainees (graduates) as an important resource to design training programs (6). We believed that it would be of great importance to do a similar analysis at present times in our hospital where we follow a training protocol similar to most hospitals in our subcontinent.

Undergraduate period is considered as the most ideal time to lay a foundation for basic skills training (7). Therefore, we enlighten our students with lectures and demonstration sessions at a skills lab basic course which is deemed compulsory. Every student is expected to build on this foundation during their internship period by actively taking part in observing and doing procedures under supervision (8). However, this is influenced by the availability of the patients and the teaching skill of the supervising doctor (8). Because of this, individual capacities of students tend to vary; this can be overcome by identifying where the student lacks and addressing it appropriately with additional training before completion of internship.

From our study, we understand that student's

perception regarding their competency to perform various procedures may vary, but this was found to be influenced by our training protocol (9, 10). For this reason, studies emphasize that training should more focused on identifying facilitators and barriers for skill development (11). Students should be encouraged to seek information on their own which will enhance their potential of learning even in the absence of a good teacher (12). Workshops using interactive lecture and educational films are proved reliable and productive (13). These evidences should be considered when formulating a training algorithm for undergraduate doctors.

As understood, perception regarding efficacy of training parameters is positively correlated with perception regarding competency to perform procedures. Based on this finding, we conclude that proper training will definitely have an influence in the career of medical graduates. The preparatory phase during medical school is a convenient time to provide the students with prerequisite information to learn procedural skills which is proved to improve their competency (14). Besides that, the students should by themselves utilize the overall training to review the risks of any procedure they learn, how to safely perform the procedure and how to tackle possible complications (15).

Conclusion

We correlated the perception regarding efficacy of training parameters with perception regarding competency to perform selective procedures. A positive correlation was obtained which spotlights the importance of the training period. Considering the varied perception towards performing procedures, we believe that the present teaching model can be tailored to meet individual learning capacities of every student. Improving the present training model should be based on evidence and should efficiently break all barriers to bring out a skillful future generation of Doctors.

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Conflict of Interest

The author declares no conflict of interest.

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