

Procedural Skills Training in Medical Undergraduate Curriculum, a Multi Center Study from 3 Universities in Southern Iran

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Abstract

Background and purpose: Training in basic clinical and procedural skills is considered an important part of the core medical undergraduate curriculum. There are some reasons to assume that junior doctors are not adequately trained in these skills. Due to the lack of enough information on skills competence of our students, this study was designed in 3 medical schools in southern Iran to evaluate whether students expectations of current training programs are fulfilled.

Method: The subjects of this study were 7th year medical students at Shiraz, Jahrom and Fassa Medical Schools in southern Iran. Through a questionnaire the students were asked to rate the necessity of each procedure (importance rating) and the quality of preparation based on a Likert's scale (from 1 as not at all important or prepared to 5 as very important or well prepared) and also the frequency of doing such procedures during their education.

Results: In spite of the fact that the students found such procedures as chest tube insertion, IV cannulation, splinting, joint aspiration, cardiopulmonary cerebral resuscitation, pleural and peritoneal fluid aspiration, pelvic examination, pap smear, phlebotomy, urinary catheterization and supra pubic aspiration very important, they told that they had not been well prepared to do them.

Procedural skills that at least 50% of the respondents performed less than 2 times were: chest tube insertion, IV cannulation, splinting, joint aspiration, pleural and peritoneal fluid aspiration, pelvic examination, pap smear, cardio pulmonary cerebral resuscitation and supra pubic aspiration.

Conclusion: Training in procedural skills needs to be given more attention and improved in the medical curriculum.

Keywords: CLINICAL SKILLS, COMPETENCY, SKILL TRAINING.

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Introduction

Training in basic clinical and procedural skills is considered an important part of the core medical undergraduate curriculum. There are some indications suggesting lack of adequate training in these skills by

junior doctors (1). Research shows that the expectations of nursing and medical staff regarding the ability of medical graduates to perform basic clinical procedures are significantly higher than is justified by the graduates' experience with such procedures (2)

Others' high expectations, combined with a lack of mastery and confidence in their own procedural skills, is a recognized source of stress for medical students and new interns (3,4). In Iranian medical schools the entire medical undergraduate

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curriculum lasts for 7 years. In a three-year preclinical period students are mainly educated in basic sciences. In the next clinical period (4 years), students start with physiopathology and clinical and procedural skills and then go through clerkship that some of which such as internal medicine, surgery, pediatrics, gynecology and obstetrics are obligatory. Senior clerkship is scheduled in years 6 and 7.

It has been contended that medical students should be competent in the performance of certain skills considered essential to manage emergency situations. Due to the lack of enough information on procedural skills competence of our students, this study was designed in 3 medical schools in southern Iran to evaluate whether students' expectations of current training programs are fulfilled. This information can foster the development of a new curriculum for training necessary skills in medical schools.

Methods

Study population:

The subjects of this study were comprised of 7th year medical students from Shiraz, Jahrom and Fassa Medical Schools in southern Iran. They were 107 medical students that 100 of them answered the questionnaires (response rate was %98). 46% of students were female and 54% were male with a mean age 25.48 and a standard deviation of ± 2.38 . Shiraz Medical School is one of the most prominent and high ranked schools in Iran (second rank in year 2006 in the national ranking system). Jahrom and Fassa medical schools are two nearby schools with similar educational programs. These two medical schools have some joint educational programs with Shiraz Medical School.

Study design:

The survey was developed after a review of literature and determining common

procedural skills necessary in undergraduate curriculum education. Thereafter, a questionnaire was designed for this purpose. The survey was piloted at two universities- Jahrom and Fassa. Subsequently, a modified questionnaire including some items on the necessity/importance, quality and frequency of performing such skills in the current curriculum was designed and given to the students to complete.

Data collection:

The students were asked to rate the necessity of each procedure (importance rating) and the quality of preparation based on the Likert's scale (from 1 as not at all important or prepared to 5 as very important or well prepared) and also the frequency of doing such procedures during their educational period.

Data analysis:

The data were analyzed, using the percentage of responses to each item in the questionnaire.

Result

Table 1 illustrates the students' views on the necessity (importance) and the quality of preparation for various skills expressed as percentages of responses 1 or 2 versus 4 or 5. As illustrated, the results suggest that in some areas, particularly, chest tube insertion, IV cannulation, splinting, joint aspiration, cardiopulmonary cerebral resuscitation, pleural and peritoneal fluid aspiration, pelvic examination, pap smear, phlebotomy, urinary catheterization and supra pubic aspiration, the students have found such skills very necessary and important but they stated that they had not been well prepared to perform them. The areas with a gap of greater than 30 percent for preparation versus necessity (importance) are bolded.

Table 2 shows the frequency of performing the procedures by the students in their clerkship period. The bolded items are the procedural skills that at least 50%

of respondents performed less than 2 times during their clerkship. These include chest tube insertion, IV cannulation, splinting, joint aspiration, pleural and peritoneal

fluid aspirates, pelvic examination, pap smear, cardio pulmonary cerebral resuscitation and supra pubic aspiration.

Table 1: Preparation and importance for procedural skills

No	Procedural skill	Preparation 1 or 2 %	Preparation 4 or 5 %	Importance 1 or 2 %	Importance 4 or 5
1	Chest tube insertion	65%	11%	18%	82%
2	Iv cannulation	76%	3%	30%	67%
3	Dressing wound	8%	81%	12%	86%
4	Suturing	11%	71%	10%	89%
5	abscess drainage	59%	18%	16%	80%
6	Splinting	68%	2%	25%	72%
7	Joint aspiration	74%	8%	22%	74%
8	Naso gastric tube insertion	7%	88%	6%	94%
9	Lumbar puncture	26%	67%	10%	84%
10	Pleural and peritoneal fluid aspiration	19%	48%	9%	88%
11	Pelvic examination	37%	27%	22%	78%
12	Pap smear	45%	30%	28%	71%
13	Normal delivery and episiotomy	7%	68%	8%	82%
14	Intravenous insertion	20%	65%	13%	87%
15	Cardiopulmonary cerebral resuscitation	19%	30%	4%	96%
16	phlebotomy	57%	43%	15%	82%
17	Urinary catheterization	32%	37%	12%	87%
18	Supra pubic aspiration	71%	8%	10%	83%

Discussion

This study was based on a self assessment measure in the form of a questionnaire. Self assessment is often used in evaluating clinical competence.^{5,6} One of the main benefits of self assessment is its low cost, making it preferable to widely used but costly and time-consuming methods of assessing clinical skills such as the objective structured clinical examination.⁷ The results of this study show that all required procedural skills are not learned by medical students during their undergraduate education. Previous studies have shown that medical schools cannot provide adequate skills training.⁸

This study demonstrates that students note some gaps between preparation and importance of several procedural skills. This is true for several procedures as mentioned in the results.

These findings, that is, not mastering medical procedural skills, are consistent with what other surveys have found.^{2,5,7,8,9}

Without proper performance of clinical skills, our graduate physicians are not able to meet the challenge without the risk of jeopardizing the patients' safety. Many procedures such as chest tube insertion, IV cannulation, joint aspiration, pleural & peritoneal fluid aspiration, cardio pulmonary resuscitation, supra pubic

Table 2: Frequency of doing by students in clerkship period (under observation)

No	Procedure	<2	2-5	6-9	>10
1	Chest tube insertion	96%	4%	0	0
2	Iv cannulation	91%	9%	0	0
3	Dressing wound	5%	5%	70%	20%
4	Suturing	0	0	5%	95%
5	Abscess drainage	40%	20%	40%	0
6	Splinting	69%	30%	10%	1%
7	Joint aspiration	72%	28%	0	0
8	Nasogastric tube insertion	0	10%	70%	20%
9	Lumbar puncture	50%	30%	20%	10%
10	Pleural and peritoneal fluid aspiration	86%	14%	0	0
11	Pelvic examination	60%	8%	22%	10%
12	Pap smear	56%	40%	4%	0
13	Normal delivery and episiotomy	40%	23%	26%	11% 23%
14	Intravenous insertion	1%	46%	30%	23%
15	Cardio pulmonary cerebral resuscitation	93%	7%	0	0
16	Phlebotomy	40%	50%		4%
17	Urinary catheterization	38%	32%	30%	0
18	Supra pubic aspiration	87%	10%	3%	0

aspiration are performed by very few individuals. Over 70% of the students reported that they had done these procedures less than 2 times in their clerkship period.

One study about internal medicine graduates in Canada showed that internal medical residents did some necessary procedures less than once in a month and so the author recommended an individual training program for each resident.¹⁰

Another study about clinical skills of postgraduates in Sydney showed that in the field of endotracheal intubation 48 percent of postgraduates at the beginning of year 3 reported low level of experience.¹¹

It should be mentioned that in some skills such as suturing, NG tube insertion, dressing wound, and normal delivery and episiotomy the preparation rate was acceptable. This may reflect the large amount of time spent and the more frequency of doing such skills on the wards.

There were some limitations to this study. First, validity of self assessed performance is low or moderate. Second, individuals may not feel prepared in one skill but may be able to practice it well. We tried, of course, to reduce this problem by asking the students specifically about their competence not their confidence.

Conclusion

This information can be used by the national curriculum committee as one of the sources to create objectives and standards for procedural skills and to improve the quality and frequency of such skills in order to optimize students' skills training programs.

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