

# Medical Education

## Perception of medical interns towards the skills they acquired

MEENAKSHI LELLA, SARALA NARAYANA, SOWMYA CHINNAIYAN

### ABSTRACT

**Background.** The undergraduate medical course in India is for five-and-a-half years. Every medical student has to undergo compulsory rotating residential internship for 12 months. During this period, interns acquire skills under supervision. The literature shows they have limited experience and confidence in performing basic and emergency procedures. We assessed interns' perception of their experience and competence.

**Methods.** We did a questionnaire-based cross-sectional study among medical students after they had completed their internship to reflect on their experience and competence in various procedural skills. A questionnaire (25 questions) based on knowledge and skills was piloted by 15 interns and was reliable (Cronbach alpha 0.9). The Likert scale ranged from never observed to performed independently under supervision.

**Results.** Seventy-eight of 80 interns responded; 51 were females (65.3%). Three-quarters of interns felt they could independently carry out venous blood sample collection, arterial blood gas interpretation, Pap smear specimen collection and digital rectal examination, but only half felt that they could do a lumbar puncture, cervical dilatation and collection of throat swab. Parenteral drug administration, catheterization, nasogastric tube insertion and cardiopulmonary resuscitation were done confidently by over 90%, but vaginal delivery and application of a plaster slab required assistance. The majority said that they had observed drainage of abscess, excision of sebaceous cyst and endotracheal tube intubation.

**Conclusion.** Most interns felt that they were competent in performing simple surgical tasks independently. However, conducting a vaginal delivery and endotracheal tube intubation were tasks that needed more support.

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### INTRODUCTION

The undergraduate medical course in India has three phases—preclinical (12 months), paraclinical (18 months) and clinical (24 months) with internship for 1 year.<sup>1</sup> The Medical Council of India (MCI) guidelines recommend 1 year of internship in various departments such as community medicine, surgery,

Sri Devaraj Urs Medical College, Sri Devaraj Urs Academy of Higher Education and Research, Kolar, Karnataka, India  
MEENAKSHI LELLA, SOWMYA CHINNAIYAN

Department of Pharmacology  
SARALA NARAYANA Department of Pharmacology and University Department of Medical Education

Correspondence to SARALA NARAYANA;  
n\_sarala@rediffmail.com

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orthopaedics, medicine, obstetrics and gynaecology (OBG), paediatrics, otorhinolaryngology (ENT), ophthalmology and casualty. Every medical student after passing the final Bachelor of Medicine and Bachelor of Surgery (MBBS) examination has to undergo compulsory rotating residential internship for a period of 12 months so as to be eligible for the award of the MBBS degree. The MCI describes internship as 'a phase of training wherein a graduate is expected to conduct the actual practice of medical and healthcare and acquire skills under supervision so that he/she may become capable of functioning independently'.<sup>2</sup>

It has been shown that medical graduates have limited experience and confidence in performing basic and emergency procedures at the end of the internship.<sup>3,4</sup> Some residents begin postgraduate training without sufficient experience in procedural skills. We did this study among medical interns to find out the skills they acquired during their internship by asking them to reflect on their experience and competence.

### METHODS

We did a questionnaire-based cross-sectional study from February to March 2015. The protocol was approved by the Institutional Ethics Committee, and all medical interns who were willing to participate in the study were included after obtaining written informed consent.

A questionnaire consisting of 25 items was prepared based on the knowledge and skills listed in the intern's log book. The questionnaire was pretested by conducting a pilot study with 15 interns and the internal consistency was found to be reliable (Cronbach alpha 0.9). After 1 year of internship, the interns were asked to give their opinion in terms of their experience and competence in various procedural skills such as emergency, diagnostic and therapeutic procedures.

The Likert scale was used to assess the level of competence, and it was scored as never observed, observed but not performed, performed with assistance and performed independently but under strict supervision of the consultant. Data were analysed using descriptive statistics.

### RESULTS

The questionnaire was distributed to 80 interns; 78 filled questionnaires were received (response rate 97.5%). There were 27 males (34.7%) and 51 females (65.3%). The diagnostic procedures performed independently by over 50% of the interns were drawing venous blood, arterial blood gas interpretation, taking a sample for Pap smear, digital rectal examination, lumbar puncture and assessment of cervical dilatation (Tables I to III).

### DISCUSSION

This study aimed to assess competence in procedural skills among medical interns at the end of their internship training.

TABLE I. Diagnostic procedures carried out by interns ( $n=78$ )

Diagnostic procedure	Not observed (%)	Observed (%)	PI (%)
Venous blood withdrawal for investigations	—	5 (6)	73 (94)
Arterial blood gas interpretation	—	6 (8)	72 (92)
Pap smear sampling	1 (1)	17 (22)	60 (77)
Digital rectal examination	2 (3)	18 (23)	58 (74)
Lumbar puncture	1 (1)	30 (39)	47 (60)
Assessment of cervical dilatation	4 (5)	32 (41)	42 (54)
Throat swab for culture	2 (3)	37 (47)	39 (50)
Proctoscopy	4 (5)	59 (76)	15 (19)

PI performed independently under strict supervision of the consultant

TABLE II. Self-rated experience of interns in surgical therapeutic procedures ( $n=78$ )

Procedure	Not observed (%)	Observed (%)	PA (%)	PI (%)
Lacerated wound suturing	—	1 (1)	—	77 (99)
Episiotomy wound suturing (skin)	—	6 (8)	—	72 (92)
Draining ascitic fluid	—	4 (5)	23 (30)	51 (65)
Conduct of vaginal delivery	—	4 (6)	46 (58)	28 (36)
Slab/cast application	—	7 (9)	46 (59)	25 (32)
Anterior nasal cavity packing*	3 (4)	59 (76)	—	15 (19)
Incision and drainage of abscess	11 (14)	40 (51)	27 (35)	—
Excision of sebaceous cyst*	2 (3)	28 (36)	47 (60)	—
Endotracheal tube intubation	1 (1)	38 (49)	39 (50)	—

\* 1 intern each did not respond

PA performed with assistance

PI performed independently under strict

supervision of the consultant

More than 75% of interns perceived that they could carry out diagnostic procedures such as venous blood sample collection, arterial blood gas interpretation, Pap smear specimen collection and digital rectal examination independently but under strict supervision, whereas lumbar puncture, assessment of cervical dilatation and collection of throat swab were accomplished only by 50% (Table I).

For the basic therapeutic interventions such as parenteral administration of drugs, catheterization, nasogastric tube insertion and cardiopulmonary resuscitation (CPR), a major procedure, which a basic doctor at the primary health centre should be able to carry out, 90% of our interns expressed that they were confident in performing independently under strict supervision of the consultant (Table III), but for some of the procedures (conduct of vaginal delivery and slab/cast application), they required assistance (Table II). This could be first because our students, when in 7th term, have hands-on training in Basic Life Support, and before joining internship, they have hands-on training in both Basic Life Support and Advance Life Support in the skills laboratory. Second, interns get more number of chances to perform CPR because they encounter the situation frequently when posted in medicine, surgery, obstetrics and gynaecology, casualty and anaesthesia. However, chances for proctoscopy and slab application are only when posted in surgery and orthopaedics, respectively, and so fewer encounters could be another reason. ENT procedures such as packing of anterior nasal cavity and removal of ear wax through syringing were observed by nearly 75% of interns (Tables II and III).

Palappallil has shown that 70%–100% of trained interns were confident of urethral catheterization, femoral vein puncture, Ryles tube insertion, 61% in conduct of normal labour and 51% in intravenous (i.v.) cannulation; they were somewhat confident or undecided about the rest of the skills.<sup>5</sup> In another study, when

TABLE III. Self-rated experience of interns in medical therapeutic procedures

Procedure	Observed (%)	PI (%)
Intramuscular injection	1	99
Bladder catheterization	3	97
Intravenous infusion	4	96
Nasogastric tube insertion	4	96
Cardiopulmonary resuscitation	9	91
Ear wax removed by syringing	78	22

PI performed independently under strict supervision of the consultant

interns were asked to express to whether internship training had helped them to master clinical skills such as i.v. injection and catheterization, 8.4% of interns strongly agreed, 25% agreed, 41.6% were neutral and 25% disagreed.<sup>6</sup>

A majority of interns expressed that surgical skills such as incision and drainage of abscess, excision of sebaceous cyst and endotracheal tube intubation were observed or performed with assistance from their consultants. In a study, interns were assessed, by direct observation, in the skill of endotracheal tube intubation on mannequin and it was reported that 22% of interns completed all steps correctly in the first attempt, 62% in the second attempt, whereas 16% required a third attempt to correctly complete all the steps. The authors concluded that training for endotracheal tube intubation should be carried out at the beginning of internship before they go for clinical practice and repeated during their rotation, so they can retain their competency and can perform whenever required.<sup>7</sup>

More than 80% of interns perceived that emergency procedures could be handled independently under strict supervision whereas for surgical and obstetric skills only 65% were confident. A study reported that 8.4% of interns strongly agreed with and 91.4% disagreed that they could handle medical

emergencies effectively.<sup>6</sup> Another study among final year medical students has shown that they lack confidence in procedures, particularly related to surgical interventions.<sup>8</sup>

A study evaluated the proficiency of 70 interns in using pressurized metered dose inhaler (pMDI), pMDI with a spacer, rotahaler, turbuhaler, and nebulizer and observed that their proficiency in using different inhaler devices was poor. It is essential to provide adequate training to medical graduates in the usage of inhaler devices so that there is proper management of patients with asthma and chronic obstructive pulmonary disease.<sup>9</sup> This is one of the important skills to be learnt and performed by our interns because, in the present scenario, many patients use nebulizers at home.

#### Limitations

Our study documented the self-assessed experience and competence of interns and they were not evaluated while performing any procedure, which could have given a better assessment of their skills. The opinion of their consultants or unit chiefs may also give us a better picture of their ability to perform various skills. Bandura advocates the principle of self-efficacy, which is an individual's judgement of his or her capabilities to perform a particular skill successfully.<sup>10</sup>

#### Conclusion

In this study most interns expressed that they were competent in performing basic surgical skills independently under

supervision; however, more attention needs to be given to skills such as conduct of vaginal delivery, abscess drainage and endotracheal tube intubation as these are skills necessary for managing a patient when they work in rural healthcare centres.

*Conflicts of interest.* None declared

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