

An analysis of the learning needs of undergraduate medical students in a developing country: the learning needs are similar to students in the West, but resources differ

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ABSTRACT

Objective: To explore the perception of undergraduate medical students in developing world regarding teaching and learning of various basic clinical skills, identifying their learning needs and directing resources of the university accordingly.

Design / Setting: A questionnaire study implemented at the time of completion of voluntary clinical skills course for four weeks at the attached Liaquat University of Medical and Health Sciences, Hyderabad, Pakistan.

Participants: All students who went through the course during consecutive sixteen months commencing from October 2008 and ending in January 2010.

Results: History taking and laboratory investigations were deemed least important by students, perhaps because these are taught to them during normal attachments in all wards. The Friedmans mean rank was highest for passing of a naso-gastric tube (12.24) and catheterisation of urinary bladder (11.66). The students felt the greatest need to learn these two invasive procedures because they are not taught elsewhere, followed by equipments and drugs used in anaesthesia, sterilisation and inserting an intravenous cannulation. The students ranked the learning of the following skills in the middle: giving intravenous and intra-muscular injections, taking blood, providing pre or post-operative care (mainly pre-operative fitness assessment and monitoring haemodynamic stability post operatively), and being able to identify surgical instruments. Asymptotic as well as Monte-Carlo significance was very high. ($p < 0.000$)

Conclusions: Student's views should form a key part of design when considering development of a skills course and resources should be geared to meet these student learning needs.

KEYWORDS

Simulators, Medical Education, Skills course, skills training, learning needs

Background:

Controlled teaching environment can be provided to undergraduate medical students for learning certain basic clinical skills through using manikins or models before they have to perform them on real patients. Many medical schools in the United Kingdom now have clinical skills laboratories which are equipped with a large host of such learning resources. Many medical schools promote their clinical laboratories and have dedicated lead consultants to teach, monitor and develop clinical skills. Furthermore, a wide variety of skills can be taught in these laboratories. For example, the University of Leeds Medical school offers teaching to second year undergraduate medical students in basic life support, vital signs, injections, blood glucose monitoring, cannulation and venepuncture while third year medical students are taught fundoscopy, rectal examination, urinary bladder catheterisation, doing an ECG and examination of the breast. Similarly, simulators have also been used in postgraduate medical teaching, for example, Colonoscopy simulators have been used to calculate efficiency ratio of learners.¹

However not all places in the world have clinical skills laboratories. Alternatively, some institutions teach the undergraduate medical students various basic skills in clinical supervised settings before they take up their first job as physicians. Some have assessed the level of training that their

institutions have thus offered and tried to improve upon deficits. Mario Sicaja et al² from Zagreb University evaluated 252 students using a questionnaire asking the students to self assess their abilities on nine groups of skills and asked 129 faculty teachers to simultaneously assess the minimum necessary level of skills they expected from the graduating students. They concluded that the teachers expected higher level of clinical skills from students than that assessed by the students. Similarly, in postgraduate teaching, the students' learning needs have been assessed by determining the difference in expectation of trainers and the trainees.³

Effectiveness of basic clinical skills training programmes has been documented and it has been suggested that longitudinal skills training offers superior preparation for abilities during the clerkship⁴. It has also been suggested that whereas students from medical schools using traditional curriculum may not differ in their knowledge based performance, (demonstrated by Multiple Clinical Questions i.e. MCQ scores) from students at medical schools with clinical skills training, the later perform better on clinical examination (measured by Objective Structured Clinical Examination i.e. OSCE).⁵

However, in many other medical schools worldwide, which implement the traditional undergraduate medical curriculum, there are no clinical skills teaching sessions for undergraduate medical students. The students get to learn this first time when

they are doing internship and are in direct contact with the patients. It was the same situation in Liaquat University of Medical and Health Sciences (LUMHS) in Hyderabad, Pakistan. This is a large medical school which is based in the second largest city of Sindh province of Pakistan. The first author was invited from United Kingdom to review and advise on the undergraduate medical curriculum at LUMHS. The professor of plastic surgery (second author) had started to run a voluntary clinical skills course in his department covering some general basic clinical skills and provided his data to the first author for analysis and review.

This study was devised to analyse the views of participating students regarding the course and determine their learning needs. Based on the learning needs, one could identify which resources are needed and what the University should aim to provide. Furthermore, there are no such published studies from Pakistan. This study was aimed at providing scientific information on the learning needs of undergraduate medical students from the developing world, which may be deemed to be different from the medical students in the western world.

Methods:

All medical students from fourth and final year at LUMHS were invited to attend four weeks of clinical skills course at the plastic surgery department voluntarily. The students had to attend the department after their normal working hours. There were dedicated junior doctors in the department who were given the responsibility to teach the attendees hands on clinical skills in a structured manner. The skills included history taking, organising blood tests, vene-puncture, giving intravenous and intra-muscular injections, intravenous cannulation, urinary bladder catheterisation, passing naso-gastric tube, dressing of surgical wounds, basic pre-operative assessment, basic post-operative assessment including haemodynamic stability, surgical theatre mannerism, principles of sterilization, identification of common surgical instruments and equipment and identification of types of drugs used in anaesthesia. The students were provided a questionnaire asking for feedback on the course which they had to fill at the end. The study was approved by the University Research and Ethics Committee. The data was computerised and statistically analysed using a statistical package. It involved all students who went through the course during consecutive sixteen months commencing from October 2008 and ending in January 2010.

Results:

90 students were recruited to the study. Students were from both sexes and both fourth year and final year. There were 32 male (35.6%) and 58 female (64.4%) students. Of the total 90 students, 62 (68.9%) were from 4th year while 28 (31.1%) students were from final year. They were all volunteers who were willing to attend the course after their normal working hours and were allocated seats on a first come first serve basis.

No student was refused entry to the course and all participants were provided questionnaire on feedback at the time of completion of the course. The response rate was 100% although this may be because students were actively encouraged by the teaching staff to ensure that feedback questionnaires were filled in.

History taking and laboratory investigations were deemed least important by students, perhaps because these are taught to them during normal attachments in all wards for clinical teaching.

Ranks

	Mean Rank
History taking	6.22
Lab investigations	6.22
Venesection	6.29
Giving injection	6.68
I/v cannulation	7.46
Catheterisation	11.66
Naso-gastric intubation	12.24
Dressing wound	6.29
Pre-operative assessment	6.71
Theatre environment	6.53
Post-operative assessment	6.62
Principles of sterilisation	7.73
Types of anaesthesia	7.81
Surgical instruments	6.54

Test Statistics ^a

N	90
Chi-Square	615.431
Df	13
Asymp. Sig.	0.000
Monte Carlo Sig.	0.000
99% Confidence Interval Lower Bound	0.000
99% Confidence Interval Upper Bound	0.000

a : Friedman Test

The Friedman mean rank was highest for catheterisation of urinary bladder (11.66) and passing of a naso-gastric tube (12.44). The students felt the greatest need to learn these two basic clinical skills perhaps because they are not taught elsewhere. This was followed by anaesthesia, sterilisation and passing an intravenous cannulation. The students ranked learning of the learning of the following skills in the middle: giving injections, taking blood, providing pre or post-operative care and being able to identify surgical instruments. Taking

history and arranging laboratory investigations were both ranked the lowest at 6.22. The Friedman asymptotic significance was high ($p < 0.000$). Despite being a good sample size, Monte Carlo significance at confidence interval of 99% was very high ($p < 0.000$). Tables above summarise the statistics

Discussion:

Our study has shown that undergraduate medical students from the developing world greatly value a basic clinical skills course, and are particularly keen on being taught naso-gastric intubation and urinary bladder catheterisation. They seem to get enough exposure in the wards on history taking and arranging laboratory tests, but identify learning needs in other clinical skills.

This study is limited to data collection from one large medical university, but the sample size has been large, observation has been over a period of one year, statistical significance has been very high and response rate has been extremely good. The teaching staff actively encouraged the students to fill the feedback questionnaires, and this could arguably lead to some response bias.

There are no such previous studies from Pakistan to compare our findings with. This study therefore can make a good baseline for local institutions to further develop and build upon. Roy Remmen's group compared four medical schools on clinical skills of students, and demonstrated positive effect of both longitudinal skill training as well as utilisation of problem based approach in these skill courses. Our study did not provide any longitudinal data and problem based learning approach was not utilised either. Our data is a cross sectional study.

There seem to be three levels of engagement in learning basic clinical skills. One side of the spectrum has structured teaching in clinical skills laboratories with simulation, models and manikins, while the other has no teaching of clinical skills at all, until the physician starts to work with real patients. In the middle is the model of teaching clinical skills on the wards, before graduating as doctors. The former model with clinical skills laboratories requires the most resource. Which model of teaching is adopted by any individual medical university may be dependant upon the local resources, as well as the demands of the local regulatory bodies. During this study, we were able to realise the pattern of clinical skills teaching at some other medical universities in Pakistan, India and Bangladesh as random examples of southeast Asia. We learned that most

institutions in this part of the world do not undertake any formal clinical skills teaching, and certainly there are hardly any clinical skills laboratories. This voluntary attempt by the professor of plastic surgery at LUMHS is therefore commendable.

This study has also identified the keenness of students to learn some specific skills through such courses prior to graduation. With a move to more globalisation of medical protocols and guidelines, a greater uniformity should also emerge in the ways in which doctors in the east or the west hemisphere of the world learn medical knowledge, attitudes and skills. There may thus be need for researchers in medical education to encourage and push for adoption of clinical skills teaching courses prior to medical graduation in the developing world.

Furthermore this study has yet again reiterated that student's views should form a key part in the curriculum design when considering development of a clinical skills course, and resources should be geared to meet these learning needs of students.

Competing Interests

None declared

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