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To cite this article: M. Hammad Ather & Tahmeena Siddiqui (2014) Urology training in the developing world: The trainers' perspective, Arab Journal of Urology, 12:1, 64-67, DOI: [10.1016/j.aju.2013.07.001](https://doi.org/10.1016/j.aju.2013.07.001)

To link to this article: <https://doi.org/10.1016/j.aju.2013.07.001>



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Published online: 05 Apr 2019.



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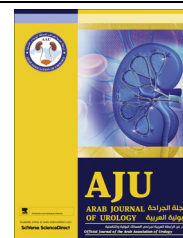
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MINI-REVIEW

Urology training in the developing world: The trainers' perspective



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Received 16 June 2013, Received in revised form 2 July 2013, Accepted 13 July 2013

Available online 13 August 2013

KEYWORDS

Residency training;
Urology;
Programme;
Developing world

ABBREVIATIONS

EBM, Evidence-based
medicine;
CPSP, College of Phy-
sicians and Surgeons

Abstract Context: Despite producing some of the leading urologists in the world, urological training in the developing world is marred by inconsistency, and a lack of structure and focus on evidence-based practice. In this review we address these issues from the trainers' perspective.

Introduction: Teaching the art and science of urological practice is a demanding task. It not only involves helping the resident to develop the depth of cognitive knowledge, but also to have an appropriate surgical judgement, and an ability to act quickly but thoughtfully and, when necessary, decisively.

Discussion: The surgeon must have compassion, communication skills, be perceptive and dedicated. Most importantly, however, he or she should have the ability to *cut and suture*. Not all of these can be inculcated in the training programme, even with the best of efforts. The selection of an appropriate candidate therefore becomes an issue of pivotal importance. The changing focus of urological training incorporates research and evidence-based practice as essential components. It is particularly important in the developing world, as there is a dearth of standardised practice models across the healthcare system. Encouraging female residents can be done by improving and tailoring the working conditions. The 'brain drain' is a major

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Peer review under responsibility of Arab Association of Urology.



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problem in the developing world, and bureaucracy and government need to take appropriate measures to provide high-quality healthcare facilities with room for professional growth.

Conclusions: The future of urology will depend on improved education and training, leading to high-quality urological care, and to developing a service that is patient focused.

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Introduction

Historically, surgical training has followed the Halstedian tradition of a defined apprenticeship. The apprenticeship model involves observation, modelling and graded participation. The trainee starts with internship and continues through residency training, with increasing responsibility until the trainee has the same abilities as the teacher. However, the apprenticeship system is characterised by long hours of work, with poorly defined goals, a lack of focus on research and evidence-based medicine (EBM), and that is limited to case presentations, and haphazard, random experiences that depend on patient flow and disease presentation.

Within the older system the assessment and evaluation are outmoded and have significant subjectivity. Standards for accreditation are ill-defined and not uniformly applied. By contrast, the modern training models have an appraisal-based evaluation, the assessment tools are more objective and there is a significant emphasis on external review of the programme and internal quality control. Training in research, ethical issues, concepts of teamwork and management are also part of the training model.

Recruitment

The training of a urological resident starts with induction and concludes upon graduation. The selection of urological residents is a difficult task, and programme directors are interested in identifying the best candidates. The selection of a high-quality resident is hampered both by the dearth of good-quality candidates, because surgical specialties are losing their attraction and trainers are struggling to appoint the right candidate for limited training places. The primary objective of the recruitment process for surgical residents is to identify those candidates who will perform well both as residents [1] and subsequently as independent surgeons [2]. However, the most appropriate strategy for achieving this objective has not been clearly established [3] and there is a significant variability in the ranking and selection systems or philosophies used by individual programmes. The use of psychometrics has been advocated in the recruitment process. This involves an 'ability test', which assesses general cognitive abilities, and

specific aptitude and personality tests, which assess the personality and behaviour, interests and motivation of the candidate. Knowledge, judgement and good technical abilities are the three fundamental requirements, but other skills, e.g., psychomotor skills, visual-spatial ability and depth perception are also critically important. They are particularly relevant in the face of the change in urological practice from open surgery to complex endourology, laparoscopy and robot-assisted surgery [4] (Table 1). The assessment of these qualities is therefore considered important during the selection of potential urological trainees. In developing countries these tools are particularly important, as constrained resources mandate the investment of time and energy in the right candidate. The selection processes in the developing world are mostly ill-defined and subjective. Knowledge is assessed by a general and specific examination, followed by short-listing the candidate for interview, with associated significant subjectivity. Female residents can be encouraged by providing tailor-made and flexible training programmes with provision to take time off to fulfil domestic obligations.

Training

Unlike in the developed world, urological training in the developing world is mostly unstructured. There is a significant variation in the standard of graduates from various programmes. Degree and exit examination qualifications reflect poorly on the standard of postgraduates [5]. Not surprisingly, the performance of the graduates is extremely variable. Some of them take leading posts even in highly competitive positions in the western world, but the standard of other graduates is extremely poor. The 'brain drain' is another major issue confronting the healthcare industry in the developing world, resulting from several factors, like a poor health infrastructure, poor financial remuneration and limited professional growth.

The training of a urological resident in Pakistan is typically on a 2 + 4- or 2 + 3-year model. In this model 2 years are spent in surgery in general, and 3 or 4 years in urology. The College of Physicians and Surgeons (CPSP, www.cpsp.edu.pk) is the principal body involved in the certification of postgraduates and in monitoring training. The exit examination for urological graduates

Table 1 Problems faced by trainers in the developing world and suggested solutions.

Major issues	Suggested solution
1 Recruitment of appropriate candidate	Use of standardised modern tools for assessing knowledge, skills and aptitude
2 Training endourology and laparoscopy	Development of indigenous low-cost and high-fidelity trainers Collaboration with world-renowned centres for used trainers Development of exchange programmes
3 Training in conducting quality research	Access to online conference and workshops available free of charge Developing a culture of EBMLinking promotion to excellence in research
4 Induction and retention of female residents	Flexible training programmes with time off Creating working atmosphere and safety measures from harassment
5 Brain drain	Close collaboration with industry to help graduates to acquire operating instruments Better job opportunities Professional growth

is conducted by CPSP. The final certification involves clearing part I, an intermediate module (after completing 2 years of training in surgery in general), and part II examinations. Neighbouring Nepal and Bangladesh have similar programmes and are closely linked to the CPSP; however, India has a different exit examination, the Diplomat National Board.

Unlike in the west, where training in complex endourological procedures and laparoscopy is on models, with mentors, and on simulators [6], training in the developing countries in these areas is still in the operating room on real patients. The major issue with the use of these devices in the developing world is their cost. There have been some low-cost simulators described in training laparoscopy [7]. However, efforts are required to attain high levels of training more quickly without compromising the safety and quality of care given to patients. This means that the developing world needs high-fidelity, low-cost simulators for training urological residents (Table 1).

Educational support for the nascent movement for evidence-based clinical practice in urology is growing. Journals provide most of the urology-specific educational material for training in EBM. Additional online and live training opportunities should be developed to encourage competence and leadership in evidence-based urology [8]. However, the extent and manner in which urology residents receive formal training in evidence-based clinical practice is variable. A survey conducted by Dahm et al. [9] of the Accreditation Council for Graduate Medical Education-accredited urology residency programmes in the USA indicated that most programme directors recognise formal EBM teaching as an important aspect of urology residency training. However, most programmes devote less time to EBM training than they would like, and urology-specific resources have been lacking.

A significant proportion of the outpatient workload in urological practice in the developing world comprises female patients. Due to cultural, social and religious reasons they are often hesitant to consult a male urologist. Therefore, there is a genuine demand for more female urologists, but even in the west there are relatively few female residents. There are many reasons for the lack of women residents in urology. In response to a 2006

survey, the most common challenges faced as a female urology resident were the refusal to be seen by male patients (60%), inappropriate treatment by male colleagues (36%) or male patients (29%), and sexual harassment (22%) [10]. Gender differences in the professional growth and academic excellence have been studied in a recent report [11] and it was noted that women produced fewer peer-reviewed publications than men during their residency, but they were equally likely to undergo fellowship training and choose an academic career. During the study period a higher proportion of men achieved the rank of associate professor. There is a definite need to increase the number of female residents. Making the programmes friendlier to female trainees, by making it more flexible with provision for time off to fulfil various other responsibilities, can make a difference. The recruitment of female staff members and encouraging female residents to preferentially deal with female patients can also make a difference. It is also important to create an atmosphere conducive for female residents to work, including safety from workplace harassment, including sexual harassment. In our programme in the last 5 years we have graduated 10 residents, including two female residents.

Medical educational opportunities and resources are considerably limited in the developing world. The expansion of computing and Internet access means that there is the potential to provide education to students through 'distant learning' programmes. Mains et al. [12] investigated the feasibility of providing a distant learning course in surgery in Malawi, assessing user requirements, technical requirements and Internet connections in two teaching hospitals in Malawi. In addition, they assessed the appropriateness of the current course material from the Edinburgh Surgical Sciences Qualification to Malawian trainees. The study found a high degree of interest from Malawian trainees in distance learning. Understanding the needs of trainees in countries such as Malawi will allow better direction of educational aid and resources to support surgical training.

Research is a small component of urological training. Scholarly research is considered by many to be an important component of residency training, but little is known about the quantity and types of publications pro-

duced by urology residents and its relation to future publication output as a junior faculty member. Yang et al. [13] assessed the publication output of urology residents and its effect on future academic achievements. They noted that the publication output correlated with increasing dedicated research time, and was associated with the pursuit of fellowship training and an academic career. Publication during residency predicted the future academic achievement.

The brain drain

The loss of trained manpower is a significant issue in the developing world. Migration and physicians leaving medicine critically deplete the pool of healthcare providers required to meet the growing need in developing countries [14]. This creates a critical shortage of surgeons in many low- and middle-income countries, and prevents an adequate response to surgical needs. There are many reasons for the migration of surgeons, but most do so for professional reasons [15]. Initiatives to improve specialist education and surgical infrastructure in the developing countries have the potential to promote the retention of the surgical workforce. There might be formal ways for developing countries to gain from the international pool of relocated surgeons [15]. The main drivers of migration can be addressed by providing an adequate domestic surgical infrastructure, surgical training programmes, and viable surgical career paths (Table 1). The reliance on international medical graduates in the USA, the UK, Canada and Australia is reducing the supply of physicians in many lower-income countries. For example, 11.7% of Pakistan-trained doctors are practising in four countries, i.e., the UK, Canada, Australia and the USA [16].

Conflict of interest

None.

Source of funding

None.

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