REVIEW ARTICLE

Current standards of postgraduate surgical education and training in Pakistan: Time to bridge the gaps in lieu of national necessity

Sabah Uddin Saqib, Abdul Hakeem Memon, Omair Saleem, Amir Shariff

Abstract

The provision of good-quality surgical care is a salient feature of every public health system. Pakistan is ranked among low and middle-income countries where the burden of surgical disease is rapidly increasing, but the capacity of the health system has not expanded at the same pace to cater current needs. One of the key components is the dearth of trained surgical specialists and lack of easy access to surgical care. College of Physicians and Surgeons, Pakistan is the main certifying institution for surgeons, while public and private teaching hospitals bear the burden of responsibility for surgical education and training. The current review article was planned to describe current standards of postgraduate surgical education and training in Pakistan and to highlight the challenges that need to be faced and the existent deficiencies that need to be met to match the nation's demand against the immense burden of surgical diseases.

Keywords: Surgical education, Postgraduate training, CPSP, Surgical diseases.

Introduction

Traditionally, surgical education has been slow to adopt innovations in teaching and learning. However, the last two decades have seen accelerated adoption of educational strategies that are optimal for adult learners, and are directed towards a profession that demands unique competencies from its practitioners. Evidence-based knowledge, skills, professionalism and scholarly pursuit are few fundamental competencies required in a medical practitioner to be proficient in the field of surgery.

In this era, surgical care is recognised as an important component of public health. However, many low- and middle income countries (LMICs) are faced with a shortage of trained professionals. An estimated two billion people lack access to basic surgical care in these countries.[1,2] Tragically, the unavailability of easy access to basic surgical services in such countries results in an estimated 1.5 million deaths per year.[3] Pakistan is ranked among those LMICs where the burden of surgical conditions and diseases is increasing, but the capacity to meet the demands is not expanding at a matching pace. Optimal surgical care is not readily accessible to most of the rural population and is also very expensive for many in the cities. This enables "quackery" (untrained individuals posing as doctors) to grow in the country. In late 80's the estimated number of trained surgeons in rural Pakistan was 0.36 per 100,000 populations[4] and very unfortunately the country is still experiencing same shortage of trained surgical specialists.

At the time of its establishment in 1947, Pakistan had only three undergraduate medical colleges and no local pathways for postgraduate certification.[5] The Pakistan Medical and Dental Council (PMDC) was established in 1962 to set standards related to the delivery of medical education across the country and to provide and monitor licensure for both general practitioners and specialists. During the same year, to combat the shortage of trained specialists, the College of Physicians and Surgeons of Pakistan (CPSP) was established to facilitate training and accreditation and to oversee the awarding of fellowship of the College of Physicians and Surgeons (FCPS).[6] This body oversees specialist training, assessment and postgraduate certification.

Although surgical postgraduate training programmes throughout the world share a common goal, they often have different mechanisms to achieve the goal. The duration of training varies between sites and there is no consistent or standardised curriculum. The current review article was planned to describe the current standards of postgraduate surgical education and training in Pakistan and to highlight the challenges that need to be overcome to meet the nation's demand for the immense burden of surgical diseases.

A. The burden of surgical diseases and surgical facilities in Pakistan

Pakistan's population is currently growing at a rate of approximately 5.28 million per year[7] and the burden of

Department of Surgery, Aga Khan University, Karachi, Pakistan.
Correspondence: Sabah Uddin Saqib. Email: sabah.saqib@aku.edu

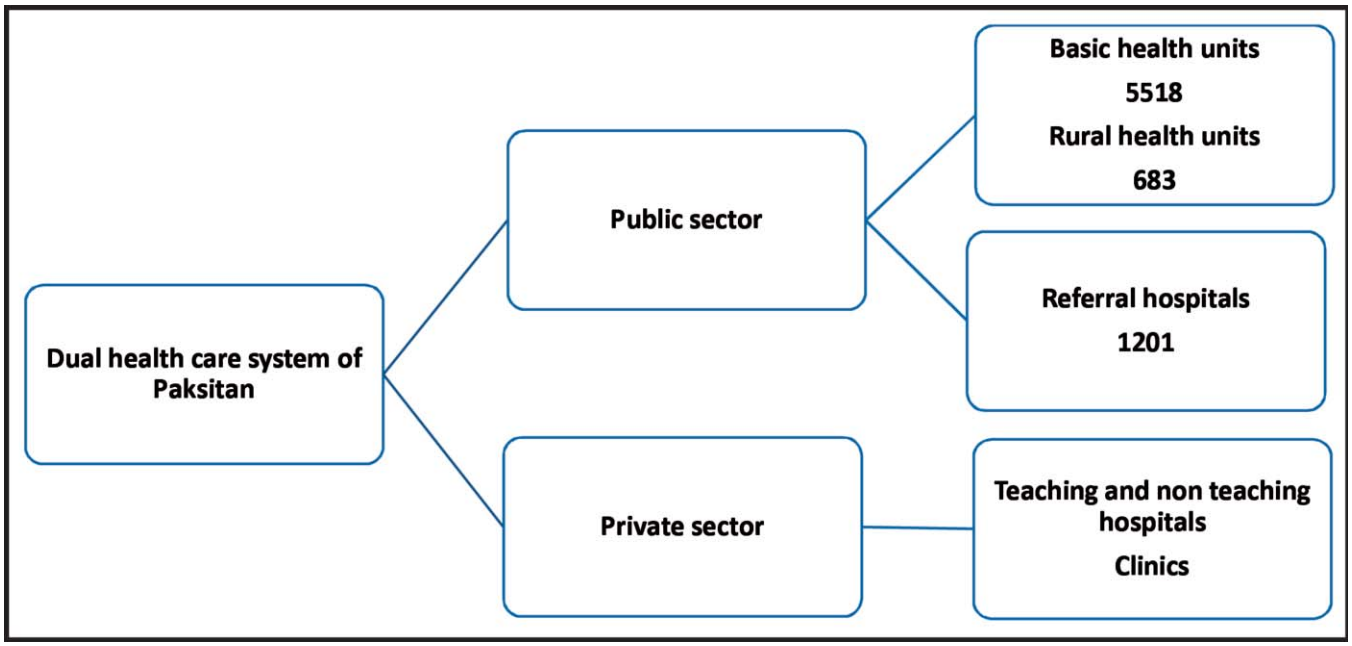

Figure: The dual healthcare system of Pakistan.

surgical diseases is increasing exponentially. Pakistan suffers an annual deficit of 17 million surgeries.[3] Trauma due to road traffic accidents (RTAs) and injuries secondary to criminal and terrorist attacks impose great demand on surgical needs. Non-communicable diseases of surgical pertinence, such as obesity, diabetic complications, and surgical oncology, are increasing along with infectious diseases, such as tuberculosis (TB) and typhoid, that continue to turn into surgical emergencies. All these situations demand timely and effective surgical interventions.

The current healthcare delivery system in Pakistan consists of public and private sectors (Figure-1).[8] Public health facilities comprise basic health units (BHUs) in every few villages, Rural Health Centres (RHCs) with both serve as referral centres for district headquarter hospitals (DHQs) which provide inpatient and acute care services for a population of between 200,000 and 2 million.[9] DHQs are secondary healthcare facilities having operating services and providing basic surgical care, such as obstetric care, basic trauma and orthopaedic services, and simple surgeries, like abscess drainage, appendectomies and hernia repair. These are supported by teaching hospitals in major cities that provide advanced medical and surgical care to almost all simple and complex medical ailments. These teaching hospitals mainly serve as a nursery to nurture surgical trainees under the supervision of well-qualified surgeons.

In the last few decades, the rising population pressure on state health institutions has allowed the private sector to bridge the gap of rising demand and limited public health facilities. Several private teaching hospitals have now taken the lead for not only providing state-of-the-art surgical care to patients, but also offering diverse surgical training programmes that are producing well-trained surgeons to cater to the burden of surgical disease in the country.

CPSP as a certifying authority

In Pakistan, surgical training starts after completion of 5 years of education at a medical college, followed by 1 year of house job. Thereafter, it takes 4-5 years of further training at a recognised teaching hospital with an adequate volume of surgical patients to make a trained surgeon.[10] The CPSP is the sole certifying body for postgraduate medical education in Pakistan while PMDC previously and now its successor Pakistan Medical council (PMC) holds the register of qualified surgeons. Some medical universities offer an alternative postgraduate training programme of Master of Surgery (MS).[10] Unfortunately, due to the rapidly increasing number of private medical institutions without proper infrastructure and faculty, the standard of under/post-graduate training has significantly deteriorated in Pakistan, which, in turn, reflects the poor outcome of training.[11]

CPSP fellowships

The CPSP currently offers fellowship training in 73

Table-1: Surgical disciplines in which the College of Physicians and Surgeons, Pakistan (CPSP) offers first and second fellowships.

First fellowship	Second fellowship
Cardiac Surgery	Breast Surgery
General Surgery	Gynaecological Oncology
Neuro Surgery	Orbit and Oculoplastics
Obstetrics & Gynaecology	Surgical Oncology
Operative Dentistry	Urogynaecology
Ophthalmology	Vascular Surgery
Oral & Maxillofacial Surgery	Vitreoretinal Ophthalmology
Orthodontics	
Orthopaedic Surgery	
OTO-RHINO-LARYNGOLOGY	
Paediatric Surgery	
Periodontology	
Plastic Surgery	
Prosthodontics	
Thoracic Surgery	
Urology	

specialties and membership in 22 disciplines.[12] Of the 73 specialties for fellowship, 23 are specifically designated to various disciplines of surgery. Of them, 7 super-specialties can only be chosen after the accomplishment of FCPS in the required discipline (Table-1). To enroll oneself in FCPS programme, one has to pass a qualifying examination, called FCPS I. The trainees then start their training in any of the CPSP-accredited medical institutions anywhere in the country. After 2 years of surgical rotations, the trainee sits for an ''intermediate module'' (IMM) examination. After IMM, FCPS training varies from 2 to 3 years, depending upon the surgical specialty chosen.[13] All candidates have to participate in workshops on biostatistics, medical research, writing skills, internet-based learning, communication skills and basic technical surgical skills. Besides, all surgical trainees maintain their e-log book through e-portal where they register a list of surgical cases in which they were involved in any capacity. Trainees are provided opportunities for attending surgical conferences, presenting papers and attending courses and workshops arranged by the surgical subspecialty societies and individual hospitals. There is a final written clinical and oral examination at the end of the training after fulfilling the eligibility criteria. Both internal and external examiners from other countries are invited for CPSP examinations. Successful candidates are awarded a fellowship degree which is mandatory prerequisite for attaining professional registration on the specialist register. CPSP now also offers a second fellowship in 7 super-specialties after the successful completion of the first FCPS.

B. Hospital-based postgraduate surgical training in Pakistan

Apprentice-mentor model of training

Postgraduate surgical training in Pakistan is based on apprenticeship model under a CPSP-approved supervisor in designated public or private hospitals. These hospitals should be accredited with CPSP[14] (Table-2). Selection for residency training programmes is generally based on academic achievement and cognitive variables which are tested at the time of entrance tests and residency interviews. Training starts after enrollment with CPSP on the basis of the selection criteria. A supervisor is assigned to each trainee, who is mainly responsible to oversee all clinical activities of the trainee, which includes clinical practice, acquisition of skills, research activities, and, above all, professional development of the trainee. Each hospital has its own internal teaching and training curriculum for surgical trainees, commonly known as post-graduate residents, or PGR, and its residency director. This residency curriculum is always in accordance with CPSP guidelines. During training in any surgical specialty, special focus is attributed to evidence-based medicine, recent advancements in diagnostic and therapeutic options of various surgical diseases, besides attaining necessary surgical skills. For these goals, both hospitals and CPSP design programmes for continuous medical education (CME), workshops, symposiums, and conferences to keep residents up to date with innovations and recent technologies in the field of surgery. Also, individual volume of patients in the hospital usually plays a vital role in the development of a surgical trainee in any particular specialty.

Table-2: Number of institutions in Pakistan offering surgical training for Fellowship of the College of Physicians and Surgeons (FCPS) in different surgical specialties.

Specialty	Number of Hospitals
General surgery	123
Cardiothoracic surgery	22
Neurosurgery	34
Orthopaedics	77
Obstetrics and gynaecology	129
Paediatric surgery	30
Ear Nose Throat (ENT) surgery	66

Surgical skill and core knowledge

The assessment of surgical skills has always been very challenging. Implementation of mini-clinical examination (Mini-clex) and direct observation of practical skills (DOPS) used by some supervisors is a valuable tool in assessing

and giving feedback to residents while the patient is receiving treatment. But this tool is not being uniformly used across all hospitals.

Other methods for assessing trainees used by CPSP and teaching hospitals include theory exams based on scenario-based questions, objective structured clinical examination (OSCE), task-oriented assessment of clinical skills (TOACS), clinical examinations as short and long cases where surgical trainees establish the diagnosis of patients based on their assessment and formulate a safe management plan. A logbook is another traditional way of evaluating trainee's activities, but it does not promise to judge surgical competency.

Researches in surgical training

The CPSP, as a rule, demands a complete prospective study which should be approved as a synopsis before the start of the actual study and its result must be compiled as a complete dissertation before the final fellowship exam. Alternatively, one has to publish two articles in peer-reviewed journals. These are mandatory requirements for all surgical trainees. Research support systems and funding authorities are well-established in a few hospitals, but they are lacking in the vast majority of hospitals, especially those located in smaller cities of the country.

Licensure for surgical specialists

Pakistan Medical and Dental Council (PMDC) previously and now its successor Pakistan Medical Commission (PMC) holds a register of all surgical specialists. An initial provisional certificate is provided for 1-year after successful completion of FCPS followed by a permanent license as a surgical specialist.[15] Currently, many ongoing reforms in the authoritative body are in process to govern medical practices in the country.

C. Postgraduate surgical training challenges

Stipend for postgraduate trainees

The financial remuneration during the postgraduate years is enormously inadequate and most surgeons-in-training find it difficult to meet the expenses of daily living. There is no standardised pay scale for the surgical trainee, with employers setting their own terms, and there is significant variation between public (United States dollar [$]500-600) and private institutions ($500-1200). The lack of standardisation and uniformity in payroll results in preferred training posts and competition for some specific teaching hospitals by the trainees.

Problems of supervision

CPSP designates a supervisor for each trainee and provides training programmes to supervisors at regular intervals. There is no doubt that the supervision of the trainee is the mainstay of quality surgical training and production of high-quality specialist, but the reality is difficult to absorb. As the financial burden increases, supervisors prefer treating patients in the private sector, leaving behind the trainees in the public sector unsupervised. The care process is dependent on the registrars and trainees. The process of mandating supervisors to be present during surgeries and having a direct role in training is yet to be achieved uniformly across the country.

Advancement in modern healthcare and disparity in surgical training

Variation in facilities has a direct impact on the training and education of trainees. As there is the advancement from open surgical techniques to minimal invasive techniques, this transition has two aspects: technology procurement and maintenance, and, secondly, training of physicians and technicians, which is often unavailable locally. Both aspects place financial burden on public and private institutions. The government of Pakistan has also enhanced urban bias by investing heavily in urban-centred health facilities[1] and providing advanced operational facilities in urban hospitals. This results in a lack of advanced facilities in institutions that are at a distance from metropolitan cities. Hence, trainees working in smaller cities or rural hospitals often have to compromise training in relatively older open surgical techniques. This results in heterogeneous acquisition of skills and general dissatisfaction among surgical trainees.

Lack of standardised surgical curriculum

Although the CPSP has devised detailed standardised curriculums for surgical training, which includes skills, workshops and tutorials, there is no regulation or monitoring of its implementation in individual hospitals. Often, human resource departments and hospitals' administrations utilise the trainees for service-related tasks instead of focussing on surgical education and training. This approach adversely affects the training of high-quality surgical specialists.

Career paths and prospects

Several factors, like training, supervision, facilities and salary, affect career prospects of the trainees. Even after completion of their training, they remain unsure about their prospects. Due to lack of resources, financial remuneration and in search of a better future, many trainees migrate abroad and pursue their careers in foreign countries.

D. Future dimensions

The surgical training programme of Pakistan needs to reform in accordance with the modern needs of the nation. There are several aspects that require urgent attention.

Majority of our population in Pakistan resides in rural areas. However, there is no uniform training programme and there is lack of interest among surgical specialists to work in deprived rural areas. In order to meet the burden of surgical diseases, it is necessary to focus on training rural surgeons and build facilities where these surgeons can practise and focus on diseases specific to these areas.

A vast number of our brightest and talented medical graduates are forced to emigrate internationally due to inadequate training programmes and insufficient stipend. A reformed training programme with standardised financial remuneration can provide a reason for medical graduates to stay and serve the nation.[16]

Additionally, there should be strict monitoring of the standard of training being provided. Although the training programme is well-designed by the CPSP, there is lack of implementation. The training programmes need to be assessed on a frequent basis for adequacy.

The need to review the model of surgical training and implementation of important newer models is the inevitable need of Pakistan. Some institutions have started competency-based assessments and are changing from the apprenticeship model. Standardisation of these competency-based models throughout the country can bring uniformity in training and will bring accountability for both the trainee and the supervisors. The mixed model of mentor-mentee can be encouraged to discuss career paths and prospects of the trainee. Standardisation of salary among the trainee will minimise the preferred approach to some hospitals. An increase in the development of simulation-based learning and assessment will enhance the opportunity to learn in a safe environment.

The CPSP has initiated a partnership with several international training programmes for Medical Training Initiatives (MTIs) where trainees have the opportunity of learning new and advanced skills and return to Pakistan where they can have further specialist exposure. These schemes can be enlarged to include several other countries.

Conclusion

The burden of surgical diseases in Pakistan is increasing at a very fast rate and demands highly skilled surgical professionals. Teaching hospitals in Pakistan, are playing a very crucial rule, but the need of the hour is to make surgical education and training curriculum compatible with national needs and global trends.

Acknowledgement: We are grateful to Shariff Charania for editorial assistance.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Akbar Zaidi S. The urban bias in health facilities in Pakistan. Soc Sci Med 1985;20:473-82. doi: 10.1016/0277-9536(85)90362-4.
2. Alkire BC, Raykar NP, Shrime MG, Weiser TG, Bickler SW, Rose JA, et al. Global access to surgical care: a modelling study. Lancet Glob Health 2015;3:e316-23. doi: 10.1016/S2214-109X(15)70115-4.
3. Zafar SN, McQueen KA. Surgery, public health, and Pakistan. World J Surg 2011;35:2625-34. doi: 10.1007/s00268-011-1304-3.
4. Blanchard RJ, Blanchard ME, Toussignant P, Ahmed M, Smythe CM. The epidemiology and spectrum of surgical care in district hospitals of Pakistan. Am J Public Health 1987;77:1439-45. doi: 10.2105/ajph.77.11.1439.
5. Akhtar J, Chaudhry ZU. Postgraduate medical education in Pakistan. J Coll Physicians Surg Pak 2013;23:1.
6. Chaudhry ZU. Establishing a System of Postgraduate Medical Education in Pakistan. J Med Regul 2015;101:37-40. doi.org/10.30770/2572-1852-101.3.37
7. Pakistan Population 2020 (Live) https://worldpopulationreview.com/countries/pakistan-population. site accessed on 12 December 2020.
8. World Health Organization. Pakistan: Health service delivery. [Online] 2020 [Cited 2020 December 09]. Available from URL: http://www.emro.who.int/pak/programmes/service-delivery.html.
9. Liaqat M, Hussain M, Liaqat I. Analysis of the Health Care Delivery System in Pakistan and Nepal. Journal of Medicine, Physiology and Biophysics 2019;62:6-10. DOI: 10.7176/JMPB/62-02
10. Malik A. Challenges in certification and credentialing of Pakistani physicians in Middle East. Pak J Neurological Sci 2015;10:36-8.
11. Ahmed I. Post graduate surgical training: past, present and future in Pakistan. J Pioneer Med Sci 2015;5:34-5.
12. The College of Physicians and Surgeons Pakistan. Training Programs. [Online] 2020 [Cited 2020 December 09]. Available from URL: https://www.cpsp.edu.pk/fcps.php.
13. Talati JJ, Syed NA. Surgical training programs in Pakistan. World J Surg 2008;32:2156-61. doi: 10.1007/s00268-008-9639-0.
14. The College of Physicians and Surgeons Pakistan. FCPS Accredited Institutions. [Online] 2020 [Cited 2020 December 09]. Available from URL: https://www.cpsp.edu.pk/accredited-institutes-fcps.php.
15. The Pakistan Medical & Dental Council. Standards of Accredation of Medical and Dental Colleges. [Online] 2018 [Cited 2020 December 09]. Available from URL: http://pmdc.org.pk/LinkClick.aspx?fileticket=F%2BbBvxOjdck%3D&tabid=400&mid=1057.
16. Aly Z, Taj F. Why Pakistani medical graduates must remain free to emigrate. PLoS Med 2008;5:e2. doi: 10.1371/journal.pmed.0050002