Nephrology Education and Continuing Education in Resource-Limited Settings

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Summary: Nephrology training programs in high-income countries have transitioned from an apprenticeship model to a well-structured, resource-driven model that supports continual professional development. In contrast, in low- and middle-income countries, medical training and in particular nephrology training has lagged behind owing to resource limitations. Some of the challenges to adequately provide training to health care professionals in low- and middle-income countries include shortage of teaching faculty, difficulty in developing curricula to meet regional needs, and a lack of resources to provide competency-based medical education. The task of providing nephrology education becomes even harder when it comes to training physicians and health care workers to manage patients with complex kidney diseases without adequate infrastructure, government support, or proper health care policies. The nephrology training curriculum for low- and middle-income countries ideally should focus on local and regional needs, implementation of preventive measures for risk modification, education of a multidisciplinary health care workforce, raising general awareness of kidney disease, and optimizing the use of available resources. The ultimate goal being overall better recognition and care for patients with kidney disease.
Semin Nephrol 37:224-233 Published by Elsevier Inc.
Keywords: Nephrology education, training, low middle income countries, health care, chronic kidney disease

The World Health Organization reports noncommunicable diseases (NCDs) as a major cause of mortality worldwide with almost three quarters of NCD-related deaths occurring in low- and middle-income countries.[1] Almost 38 million deaths occur each year worldwide from the four main NCDs—cardiovascular diseases, cancer, respiratory diseases, and diabetes, although the direct and indirect contributions of kidney disease to global deaths are unknown. NCDs have common modifiable risk factors such as unhealthy diet, insufficient physical activity, overweight/obesity, and harmful use of tobacco and alcohol. Chronic kidney disease, hypertension, diabetes, and cardiovascular disease are often the end result of these uncontrolled risk factors, leading to high health care costs and a negative impact on productivity and growth. A well-trained and educated health workforce led by a nephrologist can offer a cost-effective intervention to implement preventive measures to modify risk factors, increase awareness about other renal disorders such as acute kidney injury, increase awareness of the augmentation of cardiovascular risk with kidney disease, and implement timely holistic therapeutic interventions to improve overall patient care.[1]

In developed countries, nephrology training is structured and supported by resources, allowing trainees to maintain their knowledge and skills through continuing medical education programs. Moreover, the availability and affordability of therapeutic options offer an encouraging environment to constantly improve patient care and conduct scientific research. The limited educational resources in low- and middle-income countries (LMICs), along with expensive and unavailable treatment options for kidney diseases, create a challenging situation in designing a meaningful nephrology training curriculum. The current review outlines the conflicts faced by educational experts in planning and implementing a nephrology training curriculum for resource-limited countries.

KEY CONCEPTS IN MEDICAL EDUCATION IN GLOBAL HEALTH

After the momentous changes that Abraham Flexner introduced into the North American medical curriculum in 1910, medical education as a discipline remained static for decades under the domineering influence of basic science. Over the past 2 or 3 decades, however, medical education (and more broadly health professional

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Financial disclosure and conflict of interest statements: none.
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0270-9295/ - see front matter
Published by Elsevier Inc.
http://dx.doi.org/10.1016/j.semnephrol.2017.02.003

education) has grown rapidly into a fully fledged discipline within medical schools with its own philosophical framework of constructivism, specific research methodologies, and standardized education degrees. In contrast, the pace of change in medical education in LMICs, especially in resource-limited settings (RLS), has been slow, mostly because of their resource constraints. In many LMICs, the legacy of colonialism also may have played a role since Western medicine was introduced into these countries during colonialist periods.[2]

An unpredicted concomitant trend in health professional education in recent decades has been the rapid development of global health as a discipline. This trend has resulted in the explosive growth of health professional schools of associated global health education programs. Applied across geographic and cultural boundaries, this discipline has brought to the center of education debates about the significance of contexts. We now have a better understanding that medicine and allied health professions are practiced and taught in specific contexts, and that these contexts can differ significantly from one another. Although scientific and epidemiologic contexts are apprehended more readily, only more recently are the nuances of social contexts and determinants being recognized and incorporated into health professional education.

With regard to global cultural contexts, a major divide to consider is the difference between the cultures of individualist and collectivist settings.[3] Individualist cultures, which include the high-income countries of North America and Europe, generally are competitive and value individual autonomy. Collectivist cultures include many LMICs in Africa, South America, and Asia, and generally are oriented toward group (collective) settings and participation. The learning environments of individualist and collectivist settings are different in many respects.[3–5] Individualist cultures view learning as something the individual can acquire and apply across contexts and for which the individual can be assessed. Collectivist cultures, on the other hand, view learning as mostly situated in dynamic social contexts and cannot be transferred readily to other contexts.

A major development in medical education in recent decades in high-income countries has been the shift toward competency-based medical education (CBME). Competencies are intended to make explicit for learners what they specifically need to know in domains of knowledge, skills and attitudes of their health professional practice. Health institutions and organizations have a tendency to develop their own lists of competency domains and competencies to match their values and training needs. The degree to which such competencies are linked appropriately to specific contexts is currently a topic of debate among educators.[4,5]

With the advent of the internet in the early 1990s, numerous teaching methodologies emerged when electronic platforms became more accessible and user-friendly. Traditional modes of teaching in lecture halls are yielding to novel teaching methods such as team-based learning and flipped classrooms, and to self-directed learning, which incorporates social media and electronic devices such as mobile devices and tablets and telemedicine.[6] In RLS, the utilization of these methods may depend on a host of factors ranging from available local resources such as internet bandwidth, faculty availability, and the willingness of institutional leadership, faculty, and students to adopt these approaches.

CHALLENGES AND OPPORTUNITIES OF HEALTH PROFESSIONAL EDUCATION IN RESOURCE-LIMITED SETTINGS

The main challenges facing health professional education in RLS derive mostly from such resource constraints (Fig. 1). Some of the ways these constraints manifest themselves in health professional education are as follows.

Teaching Faculty Shortages

A general problem in RLS is the shortage of trained health professionals to provide teaching and clinical training at both undergraduate and postgraduate levels. Continuing medical education for practicing professionals is usually not available. Given the lack of postgraduate clinical training programs in LMICs, it may be important for clinical specialties such as nephrology to provide some clinical foundation during undergraduate medical education that may be applicable after graduation. Shortages in teaching faculty have the consequence that employed faculty often are stretched thin with heavy teaching loads, and also may be required to teach subjects in which they have little expertise. At a postgraduate level, salaries of academic faculty may be significantly lower than for colleagues in private practice, resulting in physicians leaving academia or holding dual appointments to supplement salaries while retaining academic privileges. These circumstances challenge the quality of health professional education in RLS.

Curriculum Development

Given their resource limitations, new health professional schools in RLS often face the unsettling dilemma on how to develop their teaching curricula. The seminal *Lancet* document of 2010 on "Health Professionals for a New Century" by Frenk et al,[7] stresses that curricula should be derived and linked to local health contexts and health needs. With severe faculty shortages, schools in RLS may believe they are constrained in developing their curricula based on local contexts and health needs, and may instead be tempted to take