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Training in pediatric nephrology for developing countries

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Abstract During recent years, there has been an increasing demand for specialized care for children with kidney diseases, even in developing countries with limited resources. It is imperative to provide suitable facilities for appropriate and relevant training in pediatric nephrology to promote growth of pediatric nephrology in these areas. The training should give emphasis on preventive aspects, early diagnosis of common diseases and their optimum management with available resources. It should focus on locally prevalent renal diseases. The training programs should take into consideration the socioeconomic and cultural framework of the local community when designing curricula. To overcome the shortage of pediatric nephrology health professionals in the developing countries, the International Pediatric Nephrology Association has taken initiatives to support development of such training programs.

Keywords Education · Developing country · IPNA · Pediatric specialty

Introduction

The development of specialties has been a major milestone in pediatrics during the last few decades. With advances in the specific fields of pediatrics, the need for formal training of specialists has become evident. Programs for such training have been available in the developed world for more than three decades. A lack of similar training facilities in developing countries has

prevented the growth of pediatric specialties [1]. Consequently, this has resulted in virtual denial of tertiary care to sick children with complex diseases of various organ systems.

During the last few years, there has been an increasing demand for specialized care for children with kidney diseases, even in regions with limited resources. In order to promote the development of pediatric nephrology in developing countries, it is imperative to provide suitable training facilities. Such training needs to be appropriate and relevant to the needs of these regions.

We propose a strategy for training in pediatric nephrology for developing countries.

Should training in pediatric nephrology in developing countries be different from that in the developed countries?

The healthcare delivery system for children with kidney diseases is markedly different in the developing world. In developed countries, governmental funding and insurance coverage take care of the high cost of medical care [2]. The resources are plenty, the expertise widely available and there is significant awareness about kidney diseases among physicians and the public.

The situation is different in the developing countries, where high infant and child mortality rates prompt direction of health budgets towards programs for family welfare, immunization and establishing perinatal care. Renal diseases are detected late and referred in a morbid condition. Unproven indigenous therapies are often resorted to by uneducated and ill-informed parents. Trained pediatric specialists are few in number and are concentrated in major cities. Specialized medical care is, therefore, often not accessible or affordable. These socio-cultural and economic factors, coupled with unsatisfactory outcomes, have resulted in passive attitudes and lack of initiatives by the government and communities.

In order to face the challenges of shortage of health professionals, we need to adapt healthcare to the existing

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resources in the framework of the community's culture and beliefs. It is necessary that training programs in developing countries take these issues into consideration when designing curricula.

Current status of training in developing countries

Physicians trained in 'adult' nephrology generally have had limited exposure to children with renal diseases, developmental biology and genetics. Similarly, general pediatricians receive little emphasis on management of patients with renal illnesses during residency training. Pediatricians who go abroad for specialized training often do not return to their country of origin. Even if they do, the training obtained abroad may not be relevant to local needs.

Thus, there is a need to develop innovative training programs in developing countries. In many instances, the infrastructure and expertise required to provide such training is available within the region.

Principles for training

The broad principles for training in pediatric nephrology in countries with limited resources are enumerated below. Training centers should have the flexibility to structure the course based on local experience, facilities and expertise.

1. The emphasis should be on preventive aspects, early diagnosis of common diseases and their optimal management within available resources.
2. The trainee should be able to identify complex conditions that need to be referred to tertiary centers.
3. The trainee should have skills to impart basic education in pediatric nephrology to other health workers in areas of prevention, early detection and timely referral.
4. Orientation to clinical research should be provided during this period.
5. The trainee should be equipped with management skills to develop a pediatric nephrology service at his place of origin.
6. In-depth knowledge of basic sciences and forefronts of research in molecular biology and genetics have little applicability in day-to-day practice. Career opportunities in these fields are likely to remain scarce in the future.
7. The training should focus on locally prevalent renal diseases (e.g., post streptococcal glomerulonephritis is more prevalent in developing countries; diseases such as falciparum malaria, leptospirosis, salmonellosis, shigellosis, dengue haemorrhagic fever, and acute infective hepatitis, along with snake bites and organophosphorous poisonings, are more common in tropical countries).

Structuring of the training program

Each training center should have at least two full-time faculty members trained in pediatric nephrology. It should have a sizeable patient load and appropriate supportive facilities; e.g., for dialysis and transplantation, pediatric surgery and urology, pathology, immunology, radiological and radionuclide imaging and diagnostics. It should be actively involved with clinical research related to locally prevalent renal diseases. It should aim at filling in gaps into the available information regarding these diseases. The faculty members at the training center should keep themselves updated in the field of pediatric nephrology and should have easy access to relevant journals; regional and international conferences.

Based on the objectives relevant to our needs, the duration of training should preferably be between 6–12 months. During training, a satisfactory degree of expertise should be obtained, in both inpatient and outpatient environments, regarding the etiology, features, and diagnosis of congenital and acquired renal diseases, and their appropriate investigation by imaging tests of function and histology. The trainees should acquire skills for the performance and interpretation of urinalysis, renal biopsy, renal imaging (including ultrasound), and basic tests of glomerular and tubular function. They should acquire skills for application of peritoneal dialysis and related techniques, together with peritoneal and vascular access for acute and chronic problems. The trainee should acquire knowledge of the indications and management of surgical interventions in the urinary tract.

Learning should essentially be self-directed and take place while working in various areas and through interactions in the rounds. Formal sessions to facilitate and supplement their efforts should consist of seminars, journal clubs, audit meetings and interdepartmental meetings. Orientation to clinical research should include collaboration with other departments and centers.

The trainee should maintain a logbook with details of case presentations, patients managed and procedures conducted, including complications and outcome. Evaluation of training should be both formative (during training) and summative (at the end of their course), the latter comprising of a written and oral examination. Following completion of training, it is important that the Center maintains close contact with the pediatrician providing feasible support and assistance.

Kidney Care Network

The Kidney Care Network aims to provide optimum care for children with kidney diseases by establishing a network of centers working in coordination. The network will consist of *nodes* and *affiliates*. The training centers will become the nodes and the trainees shall establish the affiliates. The node and the affiliates can seek opinion for their patients by telephone, facsimile, videoconference or other methods depending on available technology.

Role of academic societies

The national and international academic societies need to assume major responsibilities to enable development of training facilities. During the last two decades, the Indian Academy of Pediatrics (and similarly many other associations in the region) has constituted specialty chapters with an aim to develop expertise in pediatric specialties and encourage education and training. During the last few years, the Indian Pediatric Nephrology Group has successfully imparted short-term training in the specialty at designated centers in the country.

The International Pediatric Nephrology Association (IPNA) has recognized the need for customized fellowship training programs in pediatric nephrology in developing countries. It has recognized centers in India (Bangalore, New Delhi), Singapore and South Africa for

provision of such training. National and international cooperation in development of expertise in pediatric nephrology shall not only enhance the standards of clinical care, but will also have a favorable impact on research in the specialty.

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