

Clinical nephrology research in low-resource settings: opportunities, priorities, and challenges for young investigators.

Shuchi Anand

Division of Nephrology, Department of Medicine, Stanford University School of Medicine, Palo Alto, CA,

The increased recognition of the growing, worldwide burden of kidney disease has led to calls for prioritizing nephrology research in a global context. However, many challenges exist for young investigators interested in studying kidney disease in low-resource global settings. A lack of clear research priorities, limited funding options, poor infrastructure, difficulty forming partnerships, and unestablished paths for career advancement are a few examples. To discuss these issues, we held a moderated panel discussion in March 2015 as part of the 10th Conference on Kidney Disease in Disadvantaged Populations in Cape Town, South Africa. A group of senior investigators discussed research priorities for studying kidney disease in a global context, collaborations for clinical research, and strategies for dealing with the unique challenges faced by young investigators working in this field.

Keywords:

non-communicable disease, young investigators, low-resource settings, global health, research priorities

Introduction

Non communicable diseases (NCDs) disproportionately affect the economic, social, and health outcomes of lower- and middle-income countries (LMIC) . Kidney disease is gaining recognition among experts and policy makers as an NCD with significant morbidity and mortality, and there are increasing calls for prioritizing nephrology research in a global context. Young investigators are beginning to address this need, and they are positively influencing this emerging field of study. However, many challenges exist for young investigators, and no road map exists for addressing these challenges.

To this end, the 10th Conference on Kidney Disease in Disadvantaged Populations was held on March 17 – 18th, 2015 in Cape Town, South Africa as a satellite symposium of the International Society of Nephrology (ISN) World Congress of Nephrology 2015. As part of the symposium, a moderated panel discussion on career development for young investigators researching kidney disease in low-resource settings was held on March 17th. The panel was composed of a group of senior investigators including Drs. Guillermo Garcia-Garcia, Lawrence Agodoa, Wendy Hoy, Roberto Picoits-Filho, Karen Yeates, and Vivek Jha. The session was moderated by Drs. Shuchi Anand, Bernadette Thomas, and John Stanifer . The discussion centered around three key topics: research priorities, building collaborations for clinical research, and career

challenges faced by young investigators.

How should we frame nephrology research questions when working in low-resource settings?

From the moderated discussion, several topics emerged as important considerations for effective research in low-resource global settings. These topics were considered especially pertinent for young investigators.

Create research questions of broad interest

Young investigators should be prepared to frame their research goals in a way that can answer questions of significance both locally and more broadly (e.g., at the country or regional level). While most research begins with a very specific question in mind, given the paucity of data (and resources), successful investigators working in low-resource settings must be able to situate their research within the broader context. This underscores that even small projects in a local population can take on greater significance.

As an example, the ISN's 0x25 Campaign, which seeks to address the global burden of acute kidney injury. Similar to HIV, acute kidney injury most often affects the young and economically-productive members of society in LMICs [9, 10]. As such, preventing and treating it at a local level requires engaging with the regional and global health, economic, and social equity issues. Therefore, even local projects that aim to tackle a specific aspect of acute kidney injury in a specific population can be linked to the broader effort of addressing acute kidney injury as a health priority in LMICs.

Research agendas are not mutually exclusive. Global health nephrology encompasses many facets that include epidemiology, ethics, chronic kidney disease detection and treatment, and delivery of renal replacement therapies including transplant. Research across these areas can be complementary. For example, developing a renal registry to gather information on the epidemiology of chronic kidney disease in a region would be informative in formulating policy for the delivery of renal replacement therapies or in implementing preventative strategies targeting multiple noncommunicable diseases.

Prioritize the collection of epidemiological data and registries

Epidemiological data for acute and chronic kidney disease are sparse in most LMICs . We need high-quality epidemiology studies from these regions in order to demonstrate the extent of the burden.

This will in turn bring increased visibility to important issues in low-resource settings and can help focus multi-national efforts in priority setting, funding agendas, and collaboration.

Increasing our epidemiological knowledge base will also further our understanding of local problems. Some of these issues will be common across regions, and some will be unique to the local settings, but understanding these challenges within a population will highlight local disparities. Given the limited funding opportunities and the challenges of conducting research in low- and middle-income countries, using epidemiological data to efficiently focus research efforts on the most critical local problems with high disparities but broad implications will be of high value and importance.

Align global interests with local needs Young investigators need to be innovative in aligning global priorities with local needs. Health challenges in low-income countries extend well beyond the field of nephrology, but investigators can incorporate nephrology research within other high-profile, active areas of research and public health attention. For example, chronic kidney disease is etiologically related to communicable and non-communicable diseases as well a multitude of environmental factors [14]. As such, it can be studied from the perspective of cardiovascular and cerebrovascular disease and linked to NCD management and outcomes, which are increasingly being recognized as a global threat [2, 15]. On the other hand, it can also be studied in the context of communicable diseases, such as HIV, malaria, and tuberculosis, which have large and stable funding sources and are linked to higher risks of acute and chronic kidney disease. Likewise, kidney disease can be studied in the context of maternal mortality especially as it pertains to pre-eclampsia and eclampsia, and it can be studied in the context of high-risk environmental and geographic profiles such as hazardous mining operations, water and food chain contamination, and poor urban planning.

Answering questions about healthcare economics and health services delivery may also provide a particularly attractive way to frame global health nephrology research. Governments and healthcare systems are constantly pressured to reduce costs and increase efficiency; therefore, any research that incorporates these objectives could align global or regional priorities with local needs.

Finally, young investigators should search for ways to apply research findings from LMICs to high-income countries: the so-called reverse innovation phenomenon. Even high-income countries have disenfranchised populations with disproportionately poor outcomes. Demonstrating novel ways to address disparities in low-income countries could be applicable to multiple countries regardless of income level. Another area that could produce reverse-innovation, while at the same time answering questions about healthcare economics, is the delivery and mechanisms of

renal replacement therapies. If renal replacement therapies are to be available in low-income settings, then new technologies will need to be created, and resourceful modes of delivery will need to be developed. In high-income countries like the United States where dialysis costs consume increasingly large proportions of the healthcare budget, this type of research could also be of high value.

Conclusions

The increasing recognition of kidney disease as an important research topic worldwide is leading to many unique opportunities for young investigators; however, many challenges exist, including limited funding options, unclear research priorities, lack of infrastructure, difficulty forming partnerships, and unestablished paths for career advancement. Young investigators must be creative in framing research questions that are of broad interest, prioritizing the collection and registration of epidemiological data, and be innovative in aligning global priorities with local needs. Forming collaborations is a critical element of successful clinical research in low-resource settings, and they should be built on mutual respect, congeniality, equity, and common interest. Finally, increased home institutional support with custom benchmarks for global health career pathways is much needed.