Announcer: [00:00:03] Welcome to the Science is the Best Medicine podcast with your host Dr. Abhinav Sharma. Exploring the pressing scientific and healthcare issues of our time.

Dr. Abhinav Sharma: [00:00:15] On today's episode we will be talking about kidneys. You know, those two little organs that hang out beneath your ribs. Chronic kidney disease also called chronic renal failure describes a gradual loss of kidney function over time, but what is it that kidneys do? Your kidneys essentially act as a filter that remove excess fluids and toxins from your blood which are then excreted in your urine. When you have chronic kidney disease and when this reaches an advanced stage, dangerous levels of fluids, electrolytes and waste accumulate in your body. As per data from the National Kidney Foundation, twenty six million adults have kidney disease. And actually, most of them don't even know it. Of those individuals who know they have kidney disease, close to half a million adults are on dialysis, and close to 200,000 people live with a kidney transplant.

Dr. Abhinav Sharma: [00:01:10] The question arises, why exactly do we get kidney disease? Also, why do places like Robeson County, which is one of the poorest in socioeconomic status here in North Carolina, have such high rates of kidney failure, and what do places like Tanzania and North Carolina have in common with regards to kidney disease? What is it that we can learn from each of these places that can help us in the fight to end kidney disease worldwide. Today we're speaking with Dr. John Stanifer a physician and nephrology fellow at Duke University. Let's get into it.

Dr. Abhinav Sharma: [00:01:47] This is Abhinav Sharma here with Dr. John Stanifer talking about kidney disease in North Carolina. Thank you very much for being here John.

Dr. John Stanifer: [00:01:54] Oh thank you. I appreciate the opportunity.

Dr. Abhinav Sharma: [00:01:56] So John, can you tell us what do you mean by kidney disease? What exactly is chronic kidney disease in the context of the patients that you treat?

Dr. John Stanifer: [00:02:05] So chronic kidney disease to me in its simplest form is a reduced filtering capacity of the kidney to clear the toxins in the water and the waste from your body. But the interesting thing about chronic kidney disease is it's really this end result of so many upstream processes that have occurred for so many decades and years. Diabetes and hypertension are a part of that. But all the inflammatory processes, the obesity process, the lifestyle, the diet, everything that kind of has been upstream for many decades.

Dr. John Stanifer: [00:02:35] The end results in this easily measured end organ damage that we pick up as chronic kidney disease, and then we wonder why these people with all these upstream factors that have been going on for so many years also have such high rates of cardiovascular disease and cerebrovascular disease. You know to me it's all kind of the same end result of all of these long decades long processes. And that's the way I look at kidney disease.

Dr. Abhinav Sharma: [00:02:59] Fair enough. So in its simplest form, a person with chronic kidney disease has a decreased ability to filter toxins and to filter waste through their kidneys which they will eventually expel as urine.

Dr. John Stanifer: [00:03:10] Correct.

Dr. Abhinav Sharma: [00:03:10] OK great. So John, why don't you tell us a little bit about your own journey up till this point in time?

Dr. John Stanifer: [00:03:16] Well before I came here to the D.C. area as a research fellow, I've been a clinical fellow in nephrology here at Duke. But prior to that I trained in internal medicine and global health at the Duke global health residency training program, part of that pathway involved not only a master's degree at the Global Health Institute but also spending a significant amount of time abroad in Tanzania. My wife and I moved to Tanzania in 2013 and spent almost an entire year there working on kidney disease projects.

Dr. Abhinav Sharma: [00:03:46] That's fascinating and what took you to Tanzania. What brought about that interest?

Dr. John Stanifer: [00:03:49] Duke has an established collaboration with KCMC Hospital and University in Moshi, Tanzania. So part of this, as I was beginning to understand the global health framework and what it took to do global health research, we began to look around at different places and understand where the health disparities are in the world. And we also look for opportunities where Duke had established collaborations. One of the most important aspects of doing global health research is having partnerships. And since Duke had a longstanding collaboration with KCMC University in Moshi, we felt like this would be a good opportunity to begin studying kidney disease in subsaharan Africa.

Dr. Abhinav Sharma: [00:04:27] Well it's really fascinating stuff. So tell me a little bit about the work that you were doing in Tanzania and how that related to your clinical training in nephrology?

Dr. John Stanifer: [00:04:34] All the work I did in Tanzania began with a very simple question that I had observed while doing clinical care in Tanzania as a matter of fact. When I was there practicing, we saw a lot of patients that would present to the hospital and to the clinics with advanced stage kidney disease. As we began to care for these patients and treat them, the question naturally came up of where this kidney disease was coming from. Why they had that kidney disease and how common it was. When I began to ask my partners and other physicians in Tanzania what they thought about these questions, it was clear that no one knew the answers.

Dr. John Stanifer: [00:05:09] So from that very simple clinical observation we began the CKD Africa study. The primary objective of this was to understand the epidemiology of kidney disease, namely chronic kidney disease in that area. But more importantly than that we wanted to understand the context in which people lived and how they developed kidney disease.

Dr. Abhinav Sharma: [00:05:29] So would you be able to tell us a little bit about your findings. Do you find a chronic kidney disease or the causes of chronic kidney disease in a place like Tanzania in sub-saharan Africa are similar to that which we find here in North America or North Carolina?

Dr. John Stanifer: [00:05:44] There are actually a lot of similarities between the epidemiology of chronic kidney disease in sub-saharan Africa and the epidemiology of chronic kidney disease here in North Carolina. On the other hand there are a lot of differences as well.

Dr. John Stanifer: [00:05:56] One of the interesting things about our finding is that not only did we find a high prevalence of chronic kidney disease similar to what it is here in the United States, but we observe many cases associated with diabetes and hypertension which are the two most common causes of chronic kidney disease in this country.

Dr. John Stanifer: [00:06:12] On the other hand the diabetes and hypertension only represented about 50 percent of the cases of chronic kidney disease. So while they were substantial causes of

chronic kidney disease, many of the cases were unknown.

Dr. Abhinav Sharma: [00:06:25] Are there any thoughts to what these other 50 percent may be attributable to?

Dr. John Stanifer: [00:06:29] Well for the most part we don't know. We did also examine in addition to diabetes and hypertension. HIV as a cause. But again this was only a very small portion of the cases considering how low the prevalence of HIV was in that region, as well as how well it's now treated. Some of the other etiologies that we've thought about include schistosomiasis at least anecdotally, or in the clinics we see a significant amount of schistosomiasis which causes not just liver dysfunction but also can cause significant kidney dysfunction.

Dr. Abhinav Sharma: [00:06:58] And for the audience who don't know, what is schistosomiasis?

Dr. John Stanifer: [00:07:01] Schistosomiasis is a parasitic disease that's obtained through freshwater sources. Very common in farmers and agricultural workers, especially rice paddy workers that stand in water all day long.

Dr. Abhinav Sharma: [00:07:13] So that's really fascinating that not only are there some parallels between chronic kidney disease epidemiology with regards to diabetes and hypertension, which are definitely becoming emerging problems in places like sub-saharan Africa, and the parallel so that in the United States for diabetes and hypertension are the most common causes. But there seemed to be this whole host of other unknown causes which may be related to, as you mentioned HIV, schistosomiasis, or other essentially unknown factors at this point in time. Now, you've highlighted some of your findings here, but what were some of the challenges that you came across when doing research in this type of environment? You've had the luxury of working at Duke with regards to having the resources available here. What were some of the differences that you noted between the research environments between a place like North Carolina and Duke University compared to Tanzania?

Dr. John Stanifer: [00:08:00] Well there are many challenges when working in a resource poor environment. I think the number one challenge, or at least the number one lesson I've learned is that you have to be flexible. So that while you may go in with a specific question and that you think that you understand the exact methods that you want to employ to answer that question, you have to be very flexible in how you approach things. Things are always changing and they're never what you think they will be.

Dr. John Stanifer: [00:08:24] The other biggest challenge is relationship building. When you're in different environments, especially resource limited environments, it's hard to understand what's occurring on the ground, and building local partnerships is a key part of building research collaboration. This takes a lot of upfront work and investment that can take months to years prior to initiating a research project.

Dr. John Stanifer: [00:08:48] Another challenge is not to make any assumptions. And what I mean by that is people who have a pretty good understanding on the ground of what's occurring in their community and making assumptions about what the solutions to the problems will be, or even for that matter what you think the problems are, is not generally very helpful from a research perspective. Gaining a patients perspective, gaining the community's perspective is a critical part of doing research in resource limited settings in my opinion.

Dr. Abhinav Sharma: [00:09:16] So could you give an example of a time when you had to be flexible in the sense that you came in with a question and you realize that you actually can't answer

that particular question and so you've had to change your methodology or your approach?

Dr. John Stanifer: [00:09:29] One good example of this is when we began to find a lot of chronic kidney disease, both in our research project and in the clinical setting. Our natural instinct in our natural next step was to educate the patients and to inform the patients about their chronic kidney disease. Well, we began to find out that as people learned about their chronic kidney disease and wanted to seek out additional treatments they were all going home and taking traditional medicines, and months to years later, when they would return to clinic we would find that their kidney disease had advanced significantly.

Dr. John Stanifer: [00:10:01] So this is a good example of being flexible but also understanding the local environment and the local culture and history of what's occurring. What I thought was answering a question was actually in some aspects potentially doing more harm for some patients. So we had to take a step back and really think about what we were doing. This led us to expand the epidemiology study into a mixed methods study. We did a lot of qualitative work paralleling the epidemiology work that we did so that we could understand many of these issues with traditional medicines, the history, the culture, the social aspects around these traditional medicine uses. And what we found was not only very important but it also enriched our study significantly.

Dr. Abhinav Sharma: [00:10:44] So John really interesting stuff with regards to traditional medicines. That's not something that we often come across here in the United States, although it depends on the communities you're looking at, and what are some of the findings that you came across when looking at this aspect of treating chronic kidney disease in Tanzania?

Dr. John Stanifer: [00:11:00] Sure. No it is a very interesting aspect and something that I had not really thought about before we went to Tanzania. One of the interesting things is when we were doing the epidemiology study we began telling a lot of patients that they had kidney disease. And even in the clinical care I was providing, when I would tell people that they had kidney disease, they would almost inevitably go home and start taking traditional medicines.

Dr. John Stanifer: [00:11:22] Many of these traditional medicines can actually be nefertoxic. So for example aloe vera, when you rub it on the skin as we normally do, it's usually not a big deal, but when you boil it and ingest it in large quantities it's actually quite toxic.

Dr. Abhinav Sharma: [00:11:36] Really?

Dr. John Stanifer: [00:11:36] Yeah. So we were finding that many of the traditional medicines they were taking could be nefertoxic, or toxic to the kidneys. And we had to take a step back and try to gain a deeper understanding of what we were doing. So instead of just telling people they had kidney disease, we began to look at it using these qualitative methods using these mixed methods, trying to get a deeper understanding of the social, and cultural, and historical use of traditional medicines.

Dr. Abhinav Sharma: [00:12:02] OK. And did you find that traditional medicine was a really big aspect of the community there? Was it only a part of like a small fraction of people would be using it? Or was it surprisingly the majority of people?

Dr. John Stanifer: [00:12:12] Traditional medicine use without question is ubiquitous, and at least in this setting. But I've done a lot of further research on this and in fact across most of sub-daharan Africa, traditional medicine use is used ubiquitously.

Dr. Abhinav Sharma: [00:12:27] It's really fascinating. Well speaking of traditional medicine and

sort of, again some of the differences between Tanzania and North America. Do you find that people there are more receptive to you telling them that have chronic kidney disease and receptive to following up on their disease states compared to let's say people that you've seen over here in North America? Or do you find that some of the priorities and issues for people over there are different compared to that in North America?

Dr. John Stanifer: [00:12:52] I think there are a lot of similarities actually. And I think a lot of it just comes down to communication. Most of what we think we're communicating as physicians or researchers is not in fact what's being heard by the patient or participant. And that's one of the key lessons that I learned in Tanzania and that I'm continuing to learn down in Robeson County with the Lumbee Indians. People hear that they have kidney disease, people are getting these diagnoses in a lot of situations, or a lot of settings. But what they take away from that is very different. So there's some fundamental questions that we need to answer before we even get to the point of developing interventions and implementing interventions. One of those is how do we communicate with people?

Dr. Abhinav Sharma: [00:13:31] That's a great point. So speaking of your work with Robeson County, very interesting community here and an unfortunate community. In recent surveys, it turns out that they were in the last place with regard to health outcomes among the hundred counties here in North Carolina. Can you tell us a little bit about why that is the case?

Dr. John Stanifer: [00:13:53] It's really unbelievable Abhinav, how poor the health is in Robison's County. When I began to look at this issue after coming back from Tanzania, it was very evident that this was a huge disparity occurring, not just in kidney disease but in many different conditions. Robeson County in addition to having the poorest health outcomes in the state of North Carolina they also are the poorest county in socioeconomic terms in North Carolina, and among the poorest in the entire country. So clearly there are a lot of socioeconomic structural issues that are driving the health. In addition, they may have distinct biology, they may have distinct lifestyles that we need to understand as well. And when you put all of these together in the context of kidney disease, they may be coming together to amplify the risk.

Dr. John Stanifer: [00:14:37] So a lot of what we're doing now is trying to understand what are the attributable risks for kidney disease. How much is it the environment, how much is it the lifestyle, how much is it the biology of what's occurring, or how much is it all of these things together?

Dr. Abhinav Sharma: [00:14:50] So that's a fascinating point with regards to the fact that a community can be very different despite the fact that it's in the same state. Can you tell us a little bit about who is in Robeson County, what are the demographics of people that are there in terms of their race and ethnicity, in terms of education level, in terms of access to health care? Can you give us a little bit of context about this particular community, and can you compare that to some of your experience in Tanzania?

Dr. John Stanifer: [00:15:17] Sure. Sure. Well Robeson County is actually one of the few counties in the country that's a majority minority. So what I mean by that is that the majority of the population of that county is made up of ethnic and racial minorities. Forty percent of the population is Lumbee Indian. Lumbee Indians are the largest tribe east of the Mississippi River, 30 percent of the county population is African-American. Twenty percent is Caucasian, and 10 percent is Hispanic. So that it's not only the largest county by land area, but it's also one of the most ethnically diverse counties in North Carolina. In terms of education, the average adult literacy level in that county is the third grade reading level.

Dr. Abhinav Sharma: [00:15:55] Third grade?

Dr. John Stanifer: [00:15:56] Correct, third grade. And that's the average keep in mind. So many are reading at a functional level below a third grader. So to get back to my point earlier about communication.

Dr. Abhinav Sharma: [00:16:06] That's right.

Dr. Abhinav Sharma: [00:16:06] This is another lesson that I've learned from global health is that even simple questions can be very important have a lot of significance, and something as simple as, how do we communicate with people in this community? Is a critical question before we can even begin to tackle the issue of chronic kidney disease. Now to speak more about the issue of kidney disease in Robeson County, they have some of the highest rates in the country. They also have some of the highest rates of obesity and diabetes in the state. In fact two to three times the state average, and keep in mind North Carolina does not do very well for diabetes.

Dr. Abhinav Sharma: [00:16:38] That's right.

Dr. John Stanifer: [00:16:39] So when you put all of this together, you see rates of instage kidney disease, or dialysis dependent kidney disease, that are among the highest in the entire country.

Dr. Abhinav Sharma: [00:16:49] And so you know just going back a little bit with regards to these these patients that you're seeing. You mentioned that 40 percent are Lumbee Indians, you have a huge proportion of people who are African-American, sizable Hispanic population as well. Can you tell us a little bit about the demographic of people in Tanzania? Is it much more uniform in terms of who's there? Do you have a sort of a mix of racial and ethnic diversity that you're seeing here in Robeson compared to those people in Tanzania?

Dr. John Stanifer: [00:17:14] Well there is a fair amount of diversity in Tanzania. So in Tanzania alone there are over 100 different ethnic tribes. In the Kilimanjaro region where we were studying, there are well over 20, and in the region where we were specifically, we included at least 15 within our study. So a lot of different ethnicities. Now we don't have a full understanding of what the biologic differences may be. Some are clearly of Bantu origin which has genetic and biological origins out of central Africa, but some clearly have influence from Middle Eastern genetic families. So we don't have a full understanding of the biology of what's occurring. But clearly even separate from that, they each have a different culture and ethnic identity that surrounds them. So yes it has been critical to recognize that each may have a distinct cultural and ethnic identity. So for example, going back to some of the traditional medicine use, we found that many of the traditional medicines people were taking might have been the same across ethnicities, or across ethnic groups in the Kilimanjaro region. But many of the reasons for taking them were different. And many of the modes by which they took them were different. And a lot of this has to do with their family and ethnic history.

Dr. Abhinav Sharma: [00:18:25] Right. Right. So definitely similar to Robeson County where we have many distinct groups, you similarly see these the same groups at least tribally and potentially biologically as well amongst these individuals in Tanzania. Now I just want to touch base on something that you mentioned previously about communication, and you mentioned that people are reading at a third grade level in Robeson County which I find absolutely fascinating yet shocking at the same time. How have you as a team I guess adapted to communicating with these individuals when in fact the literacy and education rate is so low, and can you reflect on some of your time in Tanzania, and comment on your experiences with regard to communicating with that particular population as well.

Dr. John Stanifer: [00:19:10] Sure I think there are a lot of similarities and although there is a major language barrier between me and many of the study participants in Tanzania, though I tried my best in learning Swahili. It's not that entirely different from the barrier or the gap that exists between me coming as a physician at Duke and trying to speak and communicate to a lot of people in Robeson County.

[00:19:32] We almost do speak on different languages because of the difference in our literacy and education. And I find that the most important aspect of this is listening, that I can do a lot of talking to people but the more we listen and the more that we hear the terms they use, and the more that we understand how they perceive disease the better I have been communicating, and then getting across important ideas with them. And this has been applicable both to Tanzania and to Robison County.

Dr. Abhinav Sharma: [00:19:59] Now very curiously, you mention you tried to learn a little bit of Swahili and you had to work predominantly through translators. Does that change the dynamic of how you communicate with patients with regard to giving them information about their chronic kidney disease?

Dr. John Stanifer: [00:20:10] Well it does change without a question the way that I have to communicate, but in a lot of aspects if you put in the time and effort to learn the community to be a part of the community, people recognize that. So when I would go around and speak just a little bit of Swahili to patients, and try to speak Swahili best that I could, they appreciated it so greatly there was almost an instant connection, and an instant level of trust, or at least an instant level of recognizing that what I'm doing is legitimate. And for them. So in some aspects it was easier, because I could generate that trust a lot quicker just through attempting to speak their language. But in some aspects of course it is harder because you have to use for complex ideas, and for complex medical conditions you have to use a translator. So there are a lot of challenges that went into that, and quite frankly we still have a lot to learn.

Dr. Abhinav Sharma: [00:21:05] That's very true. Now speaking of developing the trust with regards to building rapport and getting that connection with the patients is very important as you said. You know going into Robeson County, maybe similarly to Tanzania, did you ever feel that you were the outsider per se? You know as you mention at 40 percent of these people in Robeson County are Lumbee Indians. Do you ever get the sense that you were the outsider and that it was hard for you to really connect with that community?

[00:21:30] Well I always get the sense I'm the outsider.

Dr. Abhinav Sharma: [00:21:32] Fair enough.

Dr. John Stanifer: [00:21:33] And I always will be an outsider no matter how much I try. But that being said, that doesn't mean that you can't try to be a part of the community and understand the community. And one of the most important things that goes into that is building local partnerships and collaborating with investigators that are local and that are as you say culturally insiders that understand the issues that can facilitate networks and that can facilitate communication. So we've been fortunate in Robeson County to have tremendous partnerships. One of them is Dr. Terry Beasley She's a nursing professor at UNC-Pembroke. UNC-Pembroke is a local branch of the UNC system and it's right there in Robeson County, it's a large university that serves the area well and she's been a phenomenal partner with it. We've actually sent Duke students down. They've been living down there all summer. And I can attest to that because I personally moved them in.

Dr. John Stanifer: [00:22:28] And one of the other phenomenal partners has been with Southeastern Regional Medical Center. So we've been able to partner with them and we've

leveraged a lot of their outpatient electronic health records to help identify patients with chronic kidney disease. Now we've also identified some opportunities for improving the quality of care within the system. But this has also given us a way to reach out into the community and find people to enroll in our study.

Dr. Abhinav Sharma: [00:22:55] So you mentioned the sense of connection that you're developing with the community in Robesson County. You mentioned you often do you feel like an outsider, no matter how much you try you won't necessarily be a member of that community. Do you feel that has adversely affected your ability to deliver patient care in those types of settings?

Dr. John Stanifer: [00:23:12] No, I don't think so Abhinav, and maybe some of that is because I don't know any different. So it's hard for me to know what to compare it to. The only way I've ever provided care to these communities is as an outsider. Now that doesn't mean that there's not been challenges and that I don't recognize that there are challenges to providing care, but that's also part of the fun of it to me, is understanding or trying to understand, how do I get through to my patients, how do I get through to the community members, and build those relationships, build the trust, and just as I was talking about all the prep work it takes with building partnerships in terms of research collaborators, it also takes a lot of prep work in building partnerships and relationships with community members and with patience.

Dr. Abhinav Sharma: [00:23:54] And in terms of developing the community relationships and the work that you've done, I just wanted to ask you a little bit about some of the lessons that you've learned in Robeson County, and how potentially some of those lessons to be applied to a place like Tanzania and vice versa. Are there lessons that we can take from a place like Tanzania and apply them in this environment like Robeson County? And as you very rightfully mentioned John, that there's so many parallels between these two areas despite the fact that they're in two geographically completely different areas. There must be some things that we can translate back and forth.

Dr. John Stanifer: [00:24:27] Yeah I think it's incredible how many similarities and parallels there are. I mean when you talk about populations in eastern North Carolina, you're talking about populations that deal with chronic adversities that are disenfranchised, that have limited health care access that have poor diets, that have under-employment, they have high disease burdens with disproportionately worse outcomes. And what's so different in saying that, than from the people in sub-saharan Africa? Right. So we can say many of the same things. So yes superficially on the surface you may not think that there would be a lot of similarities between the sub-saharan African population and the population in eastern North Carolina, but I think when you start to really dig deeper and put it into that context, you understand that there are a lot more similarities. And this idea that global health can be local health, and local health can be global health, is really I think not just an interesting buzzword, but I think really a path forward at least for my career. So bridging the gap back from Tanzania to here, well some of the most important things I learned is approaching a problem with multiple perspectives. Clearly we had to take a lot of different perspectives, and take a lot of steps back in Tanzania when we were doing the research. So looking at a problem from many different angles and aspects is a very important part. Not underestimating the patient and community perspectives. As I've mentioned time and again today, this has been one of the most invaluable parts of formulating not just the interventions and the implementations of those interventions, but the very questions that we're asking. Furthermore, even simple questions can be important. As I mentioned before, this idea of how to communicate with people. One of the interesting things that came up in Tanzania, and has also come up in almost the exact same fashion in Robeson County, has been what do people mean and understand by kidney disease?

Dr. John Stanifer: [00:26:14] When you tell someone that they have kidney disease, or you ask someone if they have kidney disease, he or she is most likely to report that they've had kidney

stones, they've had urinary tract infections, or that they have chronic back pain. So this is definitely different than what a physician would take to mean as chronic kidney disease. And these are responses that people gave to us were almost word for word the same from the people in Tanzania and the people in Robeson County. And building local partnerships, I cannot stress that enough. Having local partnerships, cultural insiders that buy into what you're doing, and really take interest in what you're doing, and want to help the community. This is really I think the most critical aspect to doing this kind of work and knowing that that's a two way relationship.

Dr. Abhinav Sharma: [00:27:00] Well that is absolutely fascinating, especially with regards to how the questions and their responses to the questions are the same, even though these individuals are in completely different areas.

Dr. John Stanifer: [00:27:11] With different histories and different understandings.

Dr. Abhinav Sharma: [00:27:12] Exactly. And so now I'm very curious. I mean you mentioned how much these areas parallel each other with regards so many aspects, from socioeconomic status, access to health care and education as you mentioned before. Is there a population it's easier to take care of? Did you find that when you were in Robeson County, was that a easier place to practice medicine compared to Tanzania?

Dr. John Stanifer: [00:27:36] Well that's pretty tough question.

Dr. Abhinav Sharma: [00:27:38] We ask those hard hitting questions John.

Dr. John Stanifer: [00:27:42] You know it's so hard in both places, but it's hard anywhere practicing medicine here is hard at Duke. And each one had its unique challenges. Certainly the language barrier is a challenge in Tanzania. Probably the most significant. But the frustrations in Robeson County, knowing that they're two hours away from Duke Hospital but yet they're that disenfranchised and lack the access that they need can be a very frustrating part as well. So each one has its own ups and downs. And I would say they're equally challenging.

Dr. Abhinav Sharma: [00:28:14] I can definitely understand from personal experience I spend a little bit of time working in India, and definitely you note compared to let's say some of the more some of the more challenging populations that I've worked with here in North America there are always parallels compared to that in developing countries. And yet it's always equally as challenging with regards to working in both places.

Dr. Abhinav Sharma: [00:28:37] Now you've had a unique opportunity to spend a bit of time in Tanzania and here in North Carolina working with people in Robeson County. Can you tell me though, does the technology, this is a little bit of a tangential question, but does technology that they have available, let's say over here compared to over in Tanzania, is there a big difference in terms of the health care technology that's available? And has that played a difference in terms of how you can deliver care?

Dr. John Stanifer: [00:29:03] Well I think there's two parts to that question, there's probably within that question, a question about personal technology that patients have, and that you can leverage or utilize to improve care. And then there's the technology that the health care system in the hospital can provide. From the patient perspective, I think that the personal technology, the literacy and the use of personal technology may actually be higher in Tanzania than it is in Robeson. And more of our study participants in Tanzania actually had a cell phone than many of the study participants down in Robeson County two hours away from here.

Dr. Abhinav Sharma: [00:29:38] I would have expected the exact opposite, but I guess that maybe just reflects my own lack of understanding as well.

Dr. John Stanifer: [00:29:43] I think it was surprising for a lot of us. But when you really start to dig in and think about it, it makes a lot of sense in some aspects. We did a lot of home visits in Robeson County, and I know that many of the students that we had not only learned a lot but they were just I think taken aback by just seeing how people live, in what setting they live, and how important that is to their health. So if you want to talk about using a mobile health intervention, well many of the homes that we went to don't even have electricity, let alone internet or cell phones. So to start speaking about mobile health interventions is probably about a thousand steps down the road.

Dr. Abhinav Sharma: [00:30:23] Fair enough.

Dr. John Stanifer: [00:30:24] Then there's the question of how do we use the technology available to us in the hospital, and then the health care setting. And you're right, there are a lot of limitations to providing care in Tanzania. Most of it revolving around the lack of laboratory, or imaging based technologies, but quite frankly many of the issues are so fundamental and can be done with such simple and low cost interventions that I don't find it that much of an imposition.

Dr. John Stanifer: [00:30:50] For example when it comes to the prevention of a lot of chronic diseases, that high cost technology is not really that helpful to me. Right. I mean some of these things that we've begun to develop in the field, for example point of care testing, can be done for very cheap and it can be done in any setting, and just some simple interventions in terms of behavioral or lifestyle changes can produce so many drastic effects down the line that it may produce more good by something simple like that. You know I think the bottom line is is that simple, low-cost lifestyle or behavioral interventions can produce a lot of change and a lot of good.

Dr. Abhinav Sharma: [00:31:29] So that's a very interesting point because oftentimes we talk about prevention of disease. You talked a little bit with regards to alternative or traditional medicines as playing a big role in the development of kidney disease for many patients. And we briefly touched upon the dietary habits of people both in Robeson County and in North Carolina. People definitely like their fried food over here.

Dr. John Stanifer: [00:31:54] And so do I.

Dr. Abhinav Sharma: [00:31:55] Yeah exactly. And so can you tell us a little bit about the diet and Tanzania and how that plays into the health of the community over there, what do people traditionally tend to eat? And how does that impact on their lifestyle and their development of kidney disease?

Dr. John Stanifer: [00:32:10] Well urbanization has had a very huge impact on not just Tanzania but on all sorts of communities and populations across sub-saharan Africa. There are the increasing influence of the Western diet, but even the traditional diets contain a lot of carbohydrate rich foods. A lot of potatoes and starches and corns that go into that. So to speak further to that, there are different cultural and different historical perceptions around obesity. We actually found that obesity rates in women were much higher than they are in men. And that actually has a very good reason for it.

Dr. John Stanifer: [00:32:44] It's because obesity is considered a beautiful characteristic or beautiful quality to have. So that if you're a man and you have a large wife and it's clear that you're providing for her, taking care of your family.

Dr. Abhinav Sharma: [00:32:58] Very different than the perception here and in North America.

Dr. John Stanifer: [00:33:01] That just comes back to knowing the community and knowing the history and knowing the culture.

Dr. Abhinav Sharma: [00:33:05] And that's fair. And so can you tell us in terms of moving forward, how can we take these lessons learned from what you've mentioned previously about your knowledge gained from Tanzania, and Robeson County, and how can we really use that to improve the health, and reduce the mortality, and the consequences of chronic disease in both counties in North Carolina and abroad?

Dr. John Stanifer: [00:33:30] Well I think that the global and local connection, first of all I think it allows us to answer broad epidemiologic questions that we wouldn't otherwise be able to answer. One good example of that is the role of obesity and the development and progression of chronic kidney disease. We know that obesity is associated with those things we don't know if it's the obesity itself or all of the lifestyle and environmental factors that go into obesity. So by studying populations in different settings we might be able to tease some of that out from an epidemiologic standpoint. And that I think is a great example.

Dr. John Stanifer: [00:34:01] More broadly speaking, what I've taken away from this is that you have to understand the context in which people live, in the communities in which they live, so that there is a biology that drives disease. But there's also a lifestyle that drives disease, and there's also the environment in which they live that drives the disease, and understanding all of those factors can add to our ability to intervene on the disease.

Dr. John Stanifer: [00:34:25] And then finally, I think what this global and local connection has done, is it makes us think about interventions that are more efficient, that are lower cost and it also really forces us to think about implementation, and getting it to the next level so that we are actually changing health and improving outcomes.

Dr. Abhinav Sharma: [00:34:42] Well I think definitely those are lessons we can all utilize, and things that we can take from these communities such as Robeson County and Tanzania and try to apply that broadly across other states and districts across North America and internationally as well.

Dr. Abhinav Sharma: [00:34:59] So John, I want to thank you so much for your time talking to us today about chronic kidney disease, and we really appreciate you being here.

Dr. John Stanifer: [00:35:06] Well thank you Abhinav, it's been my pleasure.

Dr. Abhinav Sharma: [00:35:13] So today, we have learned a lot with regards to kidney disease, what exactly is it, how do we get it, and what can we do about it. We've also heard today about how a kidney disease can be affected by the traditions, and customs and cultures from different parts of the world. But as John mentioned, at the center of all of this is communication. Whether it's in Robeson County or Tanzania. Don't you feel that communication between health care professionals and those affected by chronic kidney disease is what's needed to help improve outcomes regardless of where you are on this planet. Communication is key to help get people better. And from that point of view, it doesn't seem like we're so different after all, and I think that's going to make all the difference. Thanks for listening. I'm Abhinav Sharma, and I want to thank everyone who made today's episode possible. Until next time, I hope you've enjoyed today's dose of the Science is the Best Medicine podcast.

Announcer: [00:36:16] You've been listening to the science the best medicine podcast with your host Dr. Abhinav Sharma. This episode is brought to you by the Duke Clinical Research Institute. For more episodes and links to information about guests and topics covered, please visit [https://dcri.org/podcasts]