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# Leveraging Resources Effectively at the Community Level: Lessons Learned from the Kidney Disease Screening and Awareness Program



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*Kidney Int Rep* (2022) **7,** 2551–2554; https://doi.org/10.1016/j.ekir.2022.09.028


The prevalence of chronic kidney disease (CKD), which represents a group of kidney disorders that have reached a state of chronicity, is rapidly on the rise. In 2017, 1 in 11 people globally had CKD, representing a 29.3% increase since 1990.[1] In the United States, more than 1 in 7 adults have CKD, of which 90% of patients with stage 3 CKD do not know that their kidneys are injured.[2] Though the increase in CKD has expanded the workforce demand for nephrologists, fewer US medical graduates are specializing in nephrology, which ranks second-to-last among all subspecialties in attracting US medical graduates, leading to an acute renal physician shortage.[3] In addition, risk factors for CKD such as diabetes mellitus and hypertension have been exacerbated by the COVID-19 pandemic because stay-at-home orders have reduced opportunities for proper medical care, exercise and physical activity.[4]

As the COVID-19 pandemic wanes, we must improve kidney health literacy and the early detection of CKD to make up for shortages in the nephrology workforce. Community health screening programs can be effective for the detection and prevention of kidney diseases, but significant structural barriers limit the strength of these programs. Importantly, participant distrust of medical institutions and caregivers, particularly among minority populations, leads to decreased turnout at community screenings, causing many at-risk individuals to remain undiagnosed.[5]

Here, we reflect on the kidney disease screening and awareness program (KDSAP), a decade-old undergraduate educational model,[6] to provide insights on aspects of the program that have enabled it to provide effective free health screening and educational events to local communities at scale.

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## Designing an Educational Model for Undergraduates and Local Communities

KDSAP is an educational model that strategically selects undergraduates in US universities and develops their interest in the field of nephrology. The organization has 2 branches, namely community outreach and student career development (Figure 1). The KDSAP outreach program allows students to work alongside physicians to provide free screenings for CKD risk factors and educational events to raise public awareness about kidney disease. Community screenings and educational events are typically held at churches, nursing homes and homeless shelters, allowing volunteers to connect with medically underserved communities. KDSAP has also developed a suite of on-campus career development activities for its volunteers, such as professional training workshops, "Meet the Patient" and "Meet the Doctor" colloquia, and renal disease research opportunities. In tandem, the outreach and development branches allow volunteers to develop leadership skills and gain a strong foundation in kidney disease, while providing hands-on clinical experience and strengthening students' interests in pursuing medical careers.

Founded in 2008 at the Renal Division of Brigham and Women's Hospital, Harvard Medical School, KDSAP is now a nationwide student-run organization with 29 chapters across the US. Using data collected from over 2300 screening participants, KDSAP has shown high overall prevalence rates of CKD risk factors such as proteinuria and hypertension, alongside a high level of participant unawareness about proteinuria, hypertension, and diabetes among screening participants in KDSAP partner communities.[7,8] KDSAP is unique

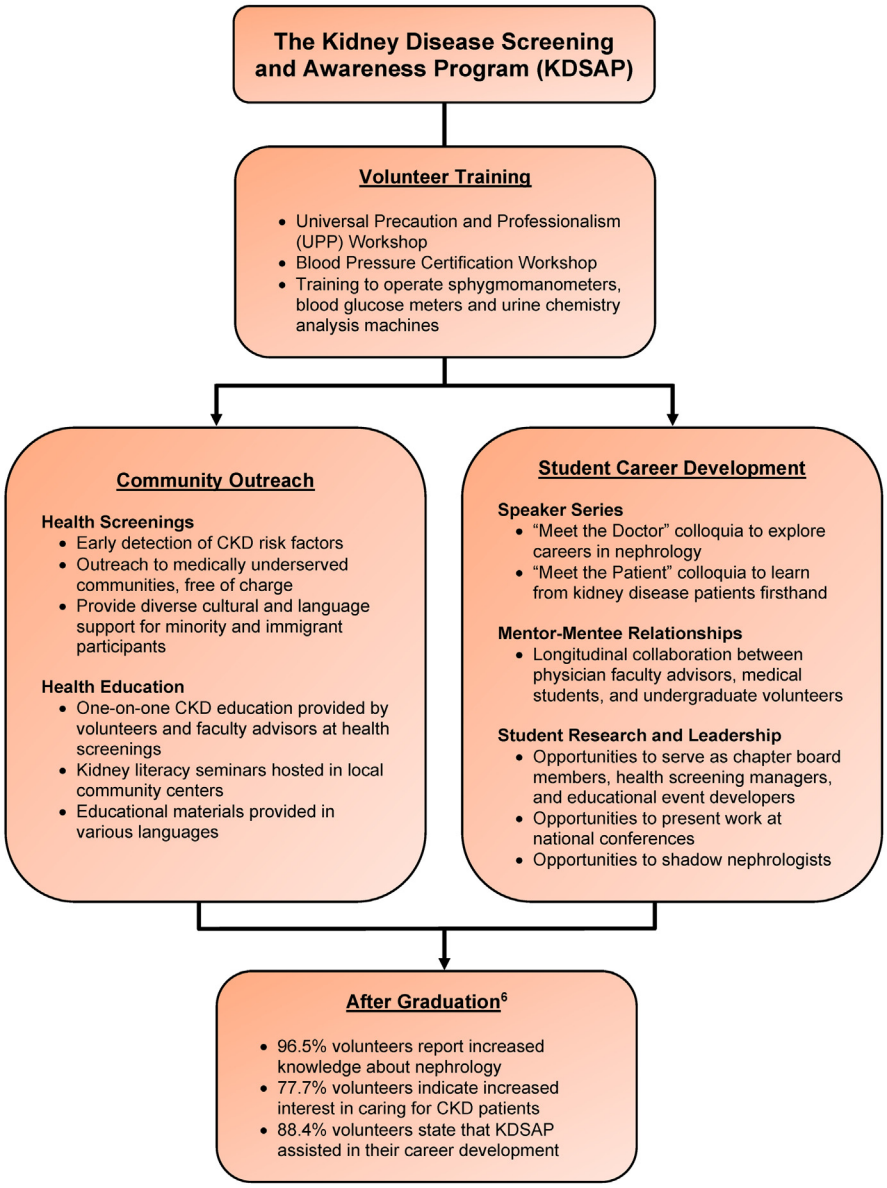


**Figure 1.** The KDSAP educational model. Each KDSAP chapter bridges community outreach with preprofessional activities to increase undergraduate interest in the field of nephrology. Picture here is a breakdown of the activities that each KDSAP chapter performs. Postgraduation statistics are adapted from Jiang *et al.* 2021.[6] CKD, chronic kidney disease.

because it is the only nephrology interest program that specifically targets undergraduates, and because it has a strong governing body. These features allow KDSAP to provide a quality educational experience to hundreds of students, many of whom will join the next generation of nephrologists.

## Universities are Uniquely Situated to Serve the Needs of Urban Minority Populations

In the United States, minority groups are at an increased risk for CKD; African Americans are more than 3 times as likely, Hispanic or Latinx individuals are 1.3 times as likely, and Asian Americans/Pacific Islanders are 2 times as likely to experience kidney failure in comparison to Caucasian Americans. Immigrant populations are another group at increased risk for CKD, who also face increased difficulties in accessing quality health care.[9]

Ethnic minorities are largely clustered in urban areas in the United States; a 2018 United States Economic Research Service study shows that minorities make up 43% of urban populations and only 22% of rural populations.[S1] University populations closely follow this minority population distribution, because almost two-thirds of American colleges are in urban areas.[S2] Thus, universities are uniquely situated to serve the needs of urban minority populations.

KDSAP mobilizes undergraduate students at universities to host health screenings in areas proximal to the university, allowing for the fostering of relationships with local communities. KDSAP chapters are spread across the United States, both in coastal regions such as New England, New York, and California, and in central states such as Texas, Michigan, and South Dakota. Most KDSAP chapters operate from urban universities, so students can directly reach at-risk minority populations in cities. KDSAP chapter leaders are encouraged to seek out screening and health education partnerships in underserved minority locations near their respective colleges. In identifying high-risk populations for CKD, KDSAP increases the impact and reach of each community outreach event and ensures that screening resources are put to good use.

## Kidney Education and CKD Screening Tools are Accessible to Volunteers With Simple Training

When comparing community health screening initiatives for various disorders, CKD screenings stand out due to their accessibility to volunteers with little training. Whereas diseases such as lung cancer require the use of computed tomography scans that are expensive and operable only by highly trained medical professionals, KDSAP community health screenings for CKD are conducted with just a sphygmomanometer, urine chemistry analysis machine, blood

glucose meter, measuring tape, and scale. The total operational cost for this equipment is approximately $800, with an additional yearly recurring cost of $1500 for consumable items such as glucose strips, lancets, and urine test strips.[6] This cost is calculated based on the assumption that one KDSAP chapter screens 200 participants in a year. KDSAP chapters are responsible for raising funds for their community and on-campus activities, and work with their faculty advisors to draft grant proposals for university and external funding. In addition, the tools utilized for KDSAP screenings do not require extensive training or upkeep. Due to the low cost and relative accessibility of screening supplies, undergraduate organizations present an ideal population of volunteers to host CKD screens.

To become KDSAP volunteers, undergraduates must undergo a rigorous training program (Figure 1). The training provided by KDSAP has tangible long-term impacts on volunteers; in a survey sent to 112 alumni, 96.5% of respondents indicated that KDSAP increased their knowledge about nephrology, and 77.7% credited KDSAP with increasing their interest in caring for patients with kidney diseases.[6] By taking advantage of the accessibility of CKD screening tools and providing rigorous kidney education to its members, KDSAP has built a robust base of volunteers who are encouraged to consider careers in nephrology, which in turn presents an effective approach to reduce the US renal physician shortage.

A significant key to success for KDSAP chapters are the faculty advisors. Each KDSAP chapter has 1 faculty advisor nephrologist who is typically affiliated with the academic institution of the chapter or has a clinical practice in the local community. These advisors serve as volunteers and ensure that participants in community outreach events are provided with expert medical advice, which allows KDSAP to sustainably offer free screening and education events. In the future, increasing the number of faculty advisors in the United States will be important for reaching more underserved communities at increased risk for CKD.

## Local Community-Based Undergraduate Programs can Improve Participant Trust

We believe that a large barrier for implementing an effective early detection program for CKD is a distrust of the medical system by many individuals, including those with kidney disease, in the community. One strategy to build patient trust, especially among minority and immigrant populations at increased risk for CKD, is to eliminate language barriers between the patient and the provider. Language barriers can lead to miscommunication or perceived hostility, which decreases patients' trust in their providers. KDSAP encourages chapters to recruit volunteers with foreign language experience, and past volunteers have conversed with participants in Spanish and Chinese, among other languages. KDSAP also continually develops educational materials and signage that reflects the language preferences of their community, by establishing partnerships with community leaders. By accommodating individuals' native language preferences, KDSAP increases participant comfort and effectively communicates information about renal disease.

In addition to alleviating language barriers, the chapter-based structure of KDSAP is useful in establishing relationships with local organizations. By working with existing community organizations such as churches and homeless shelters, each KDSAP chapter strives to develop longitudinal partnerships with local organizations that screening participants already know and trust. The trust that screening participants place into these local organizations then transfers easily to community outreach events that are often held at the location of the partner organizations, which ensures strong turnout and a positive experience for all who are screened. In contrast to a singular nationwide or multistate regional chapter structure adopted by organizations such as the National Kidney Foundation, local chapter divisions allow for each KDSAP unit to foster unique and deeply personal relationships with the communities that they serve.

While each KDSAP chapter serves their local neighborhood, they are still connected to the KDSAP Headquarters, which is located at the Renal Division of Brigham and Women's Hospital in Boston. The KDSAP Headquarters has developed a Standard Operating Procedure for KDSAP chapters to maintain the consistency of the KDSAP screening protocol and other community programs. However, each KDSAP chapter is also granted autonomy to develop projects based on local community needs. This tiered structure differentiates KDSAP from other screening programs in that quality and local diversity are simultaneously prioritized.

## The Commitment of Faculty Advisors is Essential for the Success and Growth of Community-Based Undergraduate Programs

From cumulative experience over the last 10 years, we have observed that participants respond

positively to KDSAP's community events, in part evidenced by the large number of longitudinal partnerships KDSAP has established with local organizations. To continue effectively utilizing community resources to build more partnerships, KDSAP will require additional faculty advisors who mentor students and play an integral role in advancing KDSAP's mission. Broadly, faculty advisors' commitments consist of mentoring KDSAP students in their career development; helping facilitate on-campus activities such as clinician speaker events and kidney disease patient panels; and attending monthly health screenings or identifying volunteer physicians to attend to provide medical advice at the physician station. KDSAP has developed a more detailed "Roles and Responsibilities" document to serve as a guide for any faculty who are interested in serving as advisors (Supplementary Item S1). In recognizing the importance of faculty advisors, we hope that our work inspires national organizations such as the National Institute of Diabetes and Digestive and Kidney Diseases, National Kidney Foundation, and the American Society of Nephrology to allocate funding to support faculty advisors as they invest time in mentoring KDSAP volunteers to improve kidney health literacy in the community. With funding to attract more faculty advisors, KDSAP will be empowered to reach more people and continue its goal of improving CKD awareness and the early detection of kidney disease in local communities, while cultivating student interest in nephrology to reduce the renal physician shortage in the United States.

## DISCLOSURE

All the authors declared no competing interests.

## AUTHOR CONTRIBUTIONS

KS wrote the draft. KS and L-LH conceptualized the article. L-LH supervised the writing process. Each author contributed intellectual content during the manuscript drafting/revision process and accepts accountability for the overall work and ensuring that questions pertaining to the accuracy or integrity of any portion of the work are appropriately investigated and resolved.

## SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

**Supplementary References.**

**Supplementary Item S1**. "KDSAP Faculty Advisors: Roles and Responsibilities" document.

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