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Summary: Traditional medicines are a principal form of health care for many populations, particularly in low- and middle-income countries, and they have gained attention as an important means of health care coverage globally. In the context of kidney diseases, the challenges and opportunities presented by traditional medicine practices are among the most important considerations for developing effective and sustainable public health strategies. However, little is known about the practices of traditional medicines in relation to kidney diseases, especially concerning benefits and harms. Kidney diseases may be caused, treated, prevented, improved, or worsened by traditional medicines depending on the setting, the person, and the types, modes, and frequencies of traditional medicine use. Given the profound knowledge gaps, nephrology practitioners and researchers may be uniquely positioned to facilitate more optimal public health strategies through recognition and careful investigation of traditional medicine practices. Effective implementation of such strategies also will require local partnerships, including engaging practitioners and users of traditional medicines. As such, practitioners and researchers investigating kidney diseases may be uniquely positioned to bridge the cultural, social, historical, and biologic differences between biomedicine and traditional medicine, and they have opportunities to lead efforts in developing public health strategies that are sensitive to these differences. *Semin Nephrol* 37:245-259 © 2017 Elsevier Inc. All rights reserved.

Keywords: Traditional medicines, Ayurveda, traditional Chinese medicine, kidney disease, low- and middle-income countries

The increasing burden of noncommunicable diseases (NCDs), which now account for 60% of all deaths worldwide, is one of the most important barriers to achieving the Sustainable

Development Goals.¹ Among the NCDs, chronic kidney disease (CKD) now affects more than 500 million people worldwide, with 80% of those affected living in low- and middle-income countries (LMICs). As such, the burden of CKD is growing disproportionately in LMICs, where traditional medicines (TMs) are a critical and, for 75% to 95% of people, the principal form of health care (Fig. 1).²⁻⁴ Therefore, to address the growing burden of CKD in LMICs, it will be critical to understand TM practices, especially as they relate to the prevention, treatment, and management of CKD.

Likewise, 85% of the 13 million annual cases of acute kidney injury (AKI) affect persons living in LMICs, and they may account for more than 1.7 million deaths each year, which is more than human immunodeficiency virus (HIV), tuberculosis, or malaria.⁵ Most concerning is that in LMICs, AKI most commonly affects community members who tend to be of the most economically productive age.⁶ Despite a growing awareness, little is known about the prevention and treatment of AKI in LMICs, and to address the burden optimally, it will be critical to develop an understanding of TM practices, especially as they relate to the prevention, treatment, and management of AKI.

TMs are one of the most important means of achieving health care access globally.⁷ Beyond their important role in providing health care, TMs also have social, historical, and cultural significance for many communities, ranging from Latin America and

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Financial disclosure and conflict of interest statements: none.

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0270-9295/ - see front matter

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<http://dx.doi.org/10.1016/j.semnephrol.2017.02.005>

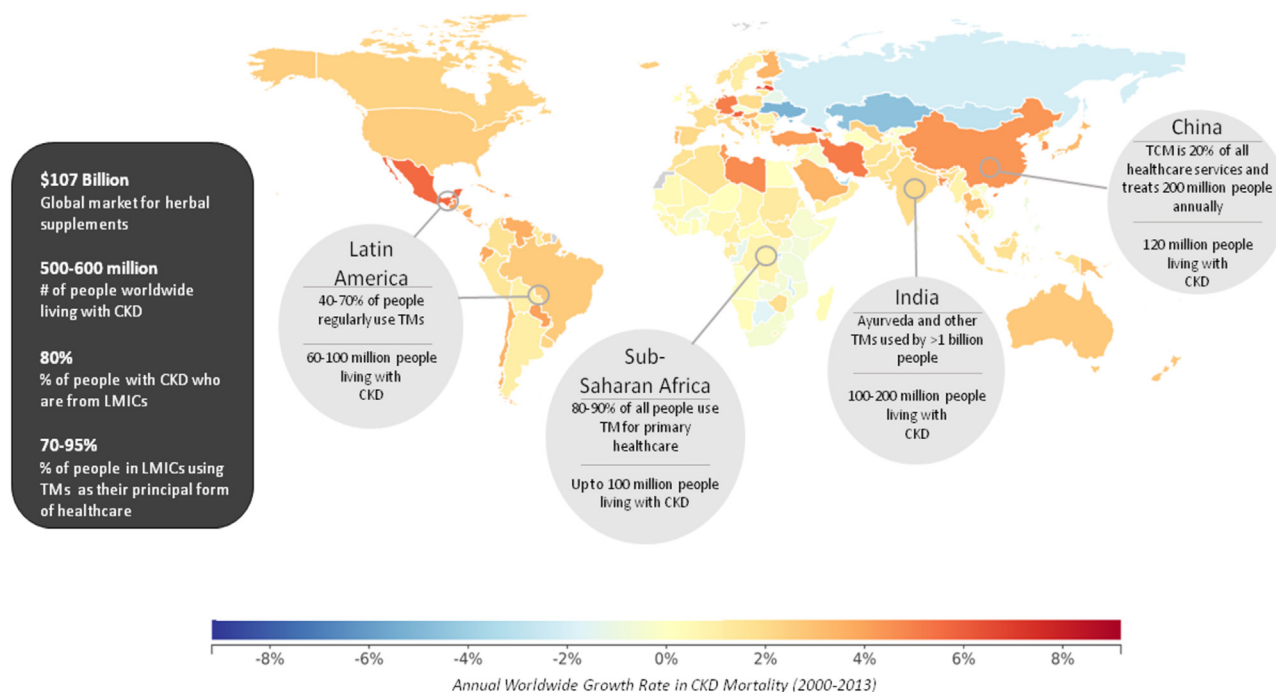


Figure 1. The burden of chronic kidney disease continues to increase worldwide, disproportionately affecting people of low- and middle-income countries where at the same time traditional medicine use is nearly ubiquitous. Adapted from the Institute for Health Metrics and Evaluation, University of Washington; open access under the Creative Commons Attribution, Non-Commercial, No Derivatives 4.0 International License (<http://www.healthdata.org/about/terms-and-conditions>).

sub-Saharan Africa to southeast Asia, which further embeds their use in promoting and maintaining health and well-being.^{2,8} As such, blatant dismissal of TMs is neither constructive nor conducive to the development of meaningful prevention and treatment programs for kidney diseases; rather, the study of TMs is fundamental to addressing kidney diseases in LMICs.

Apart from the use of TMs for meeting the health care needs of individuals in LMICs, the worldwide herbal and supplemental market share is more than US \$100 billion annually, with the United States alone accounting for 25% of that market.⁹ Most of these products are unregulated and individuals with kidney disease, in both high-income countries and LMICs, may be especially susceptible to adverse side effects. In addition, the sale of counterfeit medicines is a US \$30 billion global market, and, in many instances, in LMICs anywhere from 10% to 60% of all medicines may be counterfeit.¹⁰ The role of these products in the burden of CKD and AKI in LMICs is completely unknown at this time, yet remains an important consideration for public health strategies.

DEFINING THE TERMS AND SCOPE

We present a broad description of TM practices across the lifespan as they relate to kidney diseases in low- and middle-income settings across the world. In particular, we highlight several unique aspects,

including the lack of data in many instances, between the effective prevention and treatment of kidney diseases and TM practices in sub-Saharan Africa, China, India, and Latin America, where altogether more than 50% of the world's population lives.¹¹

We use the term *biomedicines* to refer to medicines that are evaluated scientifically and rigorously through a standardized regulatory process (eg, the Federal Drug and Safety Administration in the United States) and are prescribed under the guidance of licensed professionals. We have avoided the use of terms such as *Western medicines* or *conventional medicines* because they are not necessarily synonymous, and can have several different connotations depending on the setting.

Traditional medicines are defined, in accordance with the World Health Organization, as the sum total of knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness.² Because TMs are neither alternative nor complementary for many people across the world, we have avoided using these terms.

PERSPECTIVES FROM SUB-SAHARAN AFRICA

TMs are a critical aspect of health care in sub-Saharan Africa, where more than 80% of some populations

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