

Fifty Years of Dialysis in Africa: Challenges and Progress

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This review addresses the development of dialysis services in Africa in the face of past and contemporary challenges. Maintenance dialysis treatment programs developed in 29 countries over the past 50 years, usually many years after their independence and the end of subsequent territorial and civil wars. Eight countries had the resources to launch national dialysis programs, conventionally defined as those accommodating at least 100 patients per million population. Additionally, based on information obtained from international and local publications, conference proceedings, and personal communications, it appears that limited short-term dialysis therapy currently is available in most African countries. Currently, the prevalence of and outcomes associated with dialysis in Africa are influenced significantly by the following: (1) local health indexes, including the prevalence of undernutrition and chronic infections; (2) per capita gross domestic product; (3) national expenditures on health and growth of these expenditures with incremental demand; (4) availability and adequate training of health care providers; and (5) literacy. In an attempt to reduce the socioeconomic burden of maintenance dialysis treatment, 12 countries have adopted active transplantation programs and 5 are striving to develop screening and prevention programs. Our recommendations based on these observations include optimizing dialysis treatment initiatives and integrating them with other health strategies, as well as training and motivating local health care providers. These steps should be taken in collaboration with regulatory authorities and the public.

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Africa is a massive continent that accounts for 22.6% of the global land mass. It is divided geographically into the Sahara, desert zone, and the tropical heavily cultivated Sub-Sahara and is divided politically into 5 zones: North, West, East, Central, and South (Fig 1). The continent accommodates 1.1 billion inhabitants (15.5% of the world population), with a population growth of 2.46% per year compared to the world

average of 1.15% per year. This trend is projected to increase the proportion of Africans to 25% of the world population by 2050.¹

Population genetic studies confirm that Africa is indeed the land of our ancestors.² It has been the cradle of many civilizations, most famously that of the ancient Egyptians. The impact of pharaonic civilization on developments in science, engineering, art, religion, and literature is well known. Nephrology is no exception! The pharaohs equated the importance of kidneys to that of the heart, hence keeping them untouched in royal mummies to sustain their long journey to eternity. Many kidney diseases and their management were well described in ancient Egyptian medical papyri.³

Although African leadership regarding kidney disease knowledge

was not sustained in subsequent eras, the continent could still catch up with modern developments in nephrology, an important benchmark of which is dialysis. However, this has turned out to be a slow and tedious process, hampered by many ecological, socioeconomic, and political factors, which constitute the subject of this review. In our opinion, understanding these obstacles is essential to guide future development in the continent while facing the anticipated increasing challenge of chronic kidney disease (CKD).

INFORMATION RESOURCES REGARDING DIALYSIS IN AFRICA

It is very difficult to obtain accurate and reliable data about medical services in Africa, let alone dialysis. For example, in a recent review

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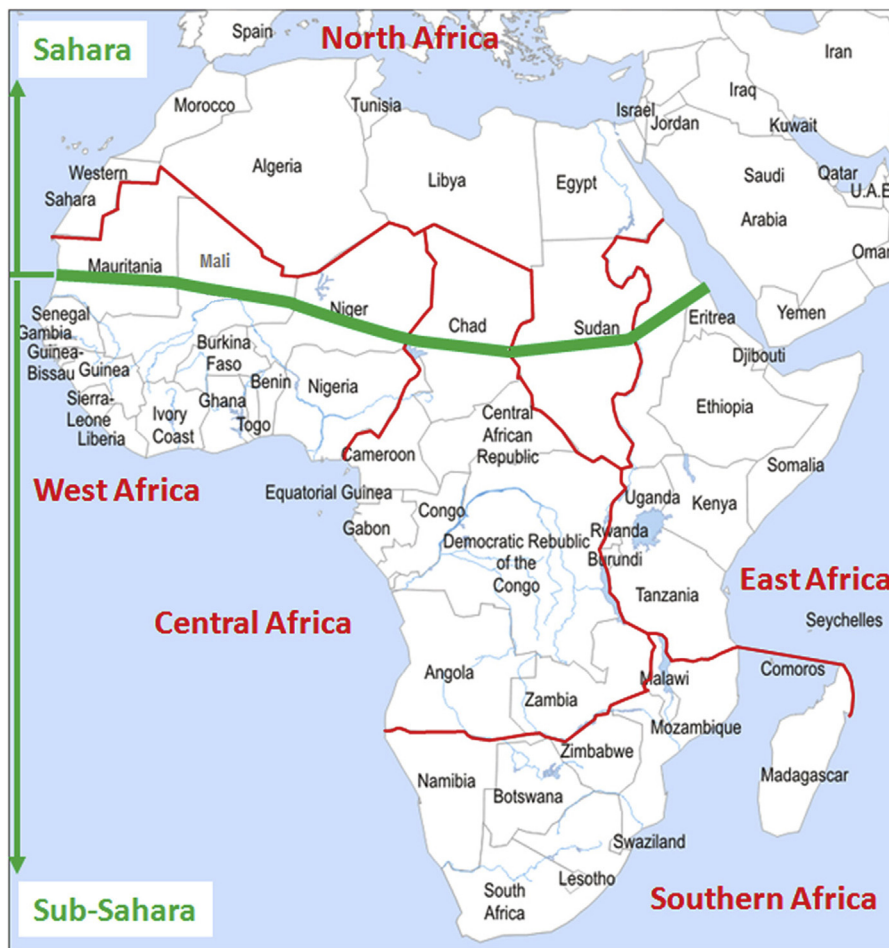


Figure 1. Map of Africa shows the geographical distinction between the Sahara and Sub-Sahara and the political zones adopted by the United Nations. Reproduced from Barsoum⁵ with permission of the publisher. Copyright 2012 World Scientific Publishing Co.

about renal replacement therapy in Sub-Saharan Africa, data from trusted resources were available for only 15 of 47 countries.⁴ A broader scope was achieved in other reports, but based on less credible resources, such as non-peer-reviewed publications, local registries, and personal communications.⁵⁻⁷

Presumably, the most reliable information is what is documented in indexed peer-reviewed periodicals. Interestingly, MEDLINE is void of publications on dialysis from Africa before 1972 and lists only one published paper that year. However, there was a progressive increase over the following years, of which about 100 papers were relevant to this review. African contributions to the world literature on dialysis have increased from

0.06% in 1973 to 1.01% in 2012, a 17-fold increase, albeit a tiny impact. It is noteworthy that this pace of increasing publications is faster in Africa than in the rest of the world (Fig 2). The quality of publications also improved, from simple statistics to now describe clinical outcomes, long-term complications, and even molecular biology and genetics.

The *African Journal of Nephrology*, the official journal of the African Association of Nephrology (AFRAN), is not indexed, yet it is a useful resource on dialysis activity across Africa. It also publishes abstracts of papers presented at the biennial AFRAN meetings, which provide individual-country or single-center data, as well as some collective information with

reasonable credibility. The official journal of the Arab Society of Nephrology and Renal Transplantation, initially called *Kidney Forum* and later the *Arab Journal of Nephrology and Transplantation*, publishes similar data, mostly on the 7 Arab countries located in the Sahara.

There are many local African journals, most of which are neither peer reviewed nor indexed. Many of their publications are single-center experiences with few national data, the merit of which may be challengeable. Moreover, most of these are difficult to retrieve and remain trapped within local institutional libraries. However, the best of these journals can be discovered through the African Journals Online (AJOL; www.ajol.info), a

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