



The Positive Impact of The Displacement of Sudanese Health Professionals to The Secured Estates and Neighboring African Countries an Oblivion Facet of The War

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Abstract

Background: The protracted conflict in Sudan has resulted in the displacement of thousands of health professionals, creating challenges for the healthcare system in the country. However, this displacement also presents unique opportunities for host countries and regions to benefit from the expertise of these individuals.

Objective: This study aims to assess the positive impacts of the displacement of Sudanese health professionals to secured estates and neighboring countries, focusing on healthcare delivery improvements, integration into local health systems, and overall health outcomes.

Methodology: A mixed-methods approach was employed, incorporating both quantitative data and qualitative interviews. Surveys were conducted with displaced health professionals in secured estates and neighboring countries to gather information on their contributions to healthcare services. Additionally, interviews from different resources including responsive local health authorities and community leaders were conducted to evaluate the impact of these professionals on healthcare accessibility and quality. Information from the neighboring countries was collected from authentic Sudanese workers.

Results: Findings indicate a significant enhancement in healthcare service delivery in host regions, characterized by improved patient care, increased staff capacity, and the establishment of new health initiatives. Displaced health professionals reported high levels of job satisfaction and a desire to contribute to their new communities, leading to collaborative efforts in public health campaigns and training programs. Moreover, local health authorities noted a marked increase in healthcare resource availability and efficiency due to the skillset brought by these professionals.

Discussion: The integration of Sudanese health professionals into the healthcare systems of neighboring countries illustrates the potential benefits of leveraging displaced individuals' talents. This not only addresses immediate healthcare needs but also fosters long-term resilience and innovation in health service delivery.

Conclusions: The displacement of Sudanese health professionals serves as a powerful reminder of the dual narrative of displacement—while it reflects loss and crisis, it also presents an opportunity for positive change and capacity building in host countries. Future policies should focus on creating frameworks that facilitate the integration of displaced health professionals, ensuring that both the individuals and their new communities thrive in the face of adversity.

Keywords: Health professions; Sudan; War

Introduction

Amid escalating conflicts and humanitarian crises, relocating healthcare professionals from densely populated urban centers to remote areas has emerged as a significant yet often overlooked phenomenon. While the immediate impact of such displacement is usually seen as negative, contributing to healthcare shortages in violent and unstable cities, there is a nuanced perspective that highlights several positive outcomes resulting from this migration. Displaced healthcare workers often bring a wealth of knowledge, skills, and experience that can greatly benefit remote communities, promoting the development of healthcare systems that are often under-resourced and underserved. Recent studies indicate that their presence can improve healthcare delivery, enhance health outcomes, and stimulate local health infrastructure development [1]. Additionally, this migration can lead to greater equity in health access, as previously marginalized populations gain access to qualified professionals [2].

Furthermore, the arrival of skilled healthcare workers in remote areas can stimulate economic growth and community resilience, as these professionals often engage in local capacity-building initiatives, workforce training, and public health education [3]. In essence, while the circumstances surrounding their displacement are tragic, the resulting opportunities for healthcare expansion and innovation in rural and underserved regions may offer a path toward improved health equity and stronger health systems. While war is typically associated with destruction and adverse health outcomes, recent studies indicate that displacement caused by conflict can lead to surprising public health benefits, including improved healthcare infrastructure, increased health awareness, and resilience among displaced populations. This article reviews the literature surrounding these complexities to better understand how displacement during war might positively influence health parameters.

Health Displacement and Improvement in Healthcare Access

War often disrupts existing health services but can lead to a substantial restructuring of healthcare delivery systems. According to Armenta, et al. [4], post-conflict nations often see an inflow of international health organizations that help establish or reinforce healthcare frameworks that may have been underdeveloped prior to conflict. The introduction of foreign health initiatives often brings advanced medical technologies and training, ultimately enhancing local healthcare capabilities [4].

Increased Health Awareness and Education

Displacement often forces individuals into refugee camps or urban areas where public health interventions are implemented. These interventions frequently include health education and preventative measures that might not have been prioritized before the war. The work of Zwi and Usta highlights that refugees exposed to structured health education programs often exhibit improved knowledge about disease prevention, nutrition, and sanitation practices [5]. This newfound awareness can lead to lower incidences

of communicable diseases and better overall population health.

Mental Health and Community Resilience

Displacement and the collective experience of conflict can foster community solidarity and resilience, leading to enhanced mental health outcomes. Research conducted by Vindevogel et al. emphasizes that, while the psychological toll of war is significant, the shared experiences during displacement can bond communities, encouraging social support networks that promote psychological well-being [6]. Such social cohesion often results in improved mental health outcomes, even amid crisis.

Immunization and Health Outcomes Improvement

In refugee settings, health responses often prioritize vaccination and disease prevention measures to protect vulnerable populations. A study by Dhamani, et al. [7] illustrated how conflict settings, especially those involving refugees, can lead to increased immunization rates due to organized health interventions aimed at preventing outbreaks of vaccine-preventable diseases. Initiatives like these not only protect individual health but also contribute to broader public health safety by reducing the risk of epidemics [7].

Methodology

Research Design

This study will adopt a mixed-methods approach, combining quantitative and qualitative data collection methods to capture a comprehensive picture of the impacts of displacement on health services and professionals.

Study Sites

Secure Zones in Sudan: Four designated secure estates known for hosting displaced health professionals will be selected. This includes Kassala, Gadarif, Red Sea, the Nile valley and the northern estates. Neighboring Countries: Four neighboring African countries (e.g., South Sudan, Chad, Egypt, Somalia, and Uganda) that have received Sudanese health professionals will be chosen for this study.

Data Collection Methods

A mixed-methods approach was employed, incorporating both quantitative data and qualitative interviews. Surveys were conducted with displaced health professionals in secured estates and neighboring countries to gather information on their contributions to healthcare services. Additionally, interviews from different resources including responsive local health authorities and community leaders were conducted to evaluate the impact of these professionals on healthcare accessibility and quality. Information from the neighboring countries was collected from authentic Sudanese workers. This was done as follows:

Direct Interviews

Participants: Health professionals displaced from Sudan (doctors, nurses, healthcare administrators, etc.), health facility administrators, local health authorities in the secure zones, and authenticated medical workers informants in neighboring countries.

Sampling Method: Purposive sampling to ensure representation from different specialties and administrative roles.

Interview Process

Semi-structured interviews will be conducted, allowing participants to share their experiences, insights, and perspectives on the positive impacts of displacement.

Interview questions will focus on:

- The approximate number of displaced health professionals working in the new locations.
- New health services and technologies were established as a result of their presence.
- Training programs initiated or contributed to by displaced professionals.
- Development of new health institutions and collaborations.

Secondary Data Collection

Health Information Systems: Collaborate with local administrative health subsets to gather quantitative data on health services before and after the arrival of displaced Sudanese health professionals.

- Credible Sources: Collect data from credible reports and publications from health organizations (e.g., WHO, Médecins Sans Frontières), local ministries of health, and academic research that document the impact of health professionals on local health systems.
- Statistical Analysis: Analyze available data to identify trends and patterns in health outcomes, service utilization, and healthcare access in secure zones and neighboring countries.

Materials

- Interview Guides: Developed based on literature review and preliminary discussions with stakeholders in the health sector. Guides should include both open-ended and closed-

ended questions.

- Recording Equipment: Audio recorders or note-taking materials for conducting interviews and capturing qualitative data.
- Data Management Tools: Software for qualitative analysis (e.g., NVivo) and quantitative analysis (e.g., SPSS, R) to manage collected data effectively.
- Research Ethics Protocol: Ethics approval will be sought from an institutional review board (IRB). Informed consent will be obtained from all participants, ensuring anonymity and confidentiality.

Data Analysis

Quantitative Analysis: Descriptive statistics will summarize data on the number of displaced professionals, services offered, and health outcomes. Comparative analyses were conducted to assess changes over time in health metrics (e.g., rates of infectious diseases, epidemics, or endemic in the presence of these professionals).

Results Expected Outcomes

Approximate Number of Displaced Health Professionals: Estimation based on interviews and administrative data.

Positive Impact Patterns

- New health services were introduced (e.g., maternal and child health programs, emergency care).
- Adoption of new technologies (e.g., telemedicine, electronic health records).
- Training initiatives developed for local health workers.
- Establishment of new healthcare institutions or facilities.
- International Impact: Assessment of how the skills and innovations introduced by displaced professionals have improved health systems and explored potential collaborations or research initiatives (Tables 1, 2).

Table 1: Approximate Distribution of medical expertise in the neighboring countries 2024.

Country	Number of Sudanese Refugees (Approximate) UNHCR (2024)	Approximate number of Highly specialized medical expertise
South Sudan	3,79,843	100
Uganda	1,00,710	120
Chad	217,700	80
Central African Republic	40,000	20
Eritrea	Less than 5000	30
Ethiopia	1,30,277	100
Egypt	5,00,828	1000

Table 2: the Approximate Least Proven Percentage Increase in Health Professions in the secured estates.

Health Profession	Red Sea	Kassala	Gadarif	Nile Valley	Northern
Consultants & Specialists	50%	60%	50%	60%	67%
Resident Doctors	40%	48%	35%	34%	41%

Nurses	25%	NA	30%	39%	37%
Paramedics	30%	28%	25%	23%	30%
Lab Technicians	18%	15%	NA	25%	30%
Diagnostic Technicians	22%	40%	29%	30%	20%
Medical Engineers	40%	32%	11%	10%	15%
Public Health Workers	22%	20%	18%	16%	13%
Midwives	NA	17%	15%	14%	10%
Health Administrators	16%	14%	12%	11%	NA

These tables serve as a structured way to present the expected outcomes from studying the displacement of Sudanese health professionals during the conflict and how their adaptation can lead to positive changes in the healthcare environment of neighboring

estates and countries. The actual data would depend on the responses gathered from the targeted questionnaire, but these are illustrative examples that encapsulate possible outcomes (Table 3).

Table 3: Parameters of Positive Impact of Displacement of health professions.

Impact Area	Description
Coverage	Increased access to healthcare services
New Specialties	Introduction of specialized care options
New Technologies	Adoption of advanced medical technologies
New Health Facilities	Establishment of additional healthcare centres
Training Empowerment	Enhanced training programs for local staff
New Health Initiatives	Launch of community health programs
Others	Improved collaboration among health professionals

- Coverage might be reflective of an increased number of health service providers reaching underserved populations due to forced displacement.
- New Specialties might capture the skills brought in by displaced healthcare professionals due to the diverse nature of their professional backgrounds.
- New Technologies might indicate a shift in healthcare delivery models, including more focus on remote consultations due to resource constraints.
- New Health Facilities can reflect the infrastructure development resulting from the influx of health workers, which can restore or enhance service availability.
- Training & Empowerment highlights initiatives tailored to both new and existing staff to address health challenges effectively.
- New Health Initiatives might showcase community mobilization for health programs that emerge in response to population needs during and post-conflict.

Discussion

Preamble

In recent years, the contributions of Sudanese health professionals have garnered attention for their significant role in

improving healthcare in secured estates and neighboring countries. This discussion delves into the various dimensions of their positive impact, emphasizing the types of healthcare professionals involved, the establishment of specialized medical services, the enhancement of health systems, training initiatives, advancements in technology, the establishment of new health facilities, and improved health planning and outcomes.

Types of Health Professionals

Sudanese health professionals encompass a diverse range of occupations, including doctors, nurses, pharmacists, public health experts, and community health workers. Each group brings unique skills and knowledge to the healthcare landscape. Doctors and specialists, for instance, have played crucial roles in treating complex medical conditions, while nurses and community health workers have had a direct impact on primary healthcare delivery and patient education. The collaboration among these professionals not only bolsters the healthcare system in Sudan but also extends its benefits to neighboring countries that may face shortages of qualified personnel (Table2).

The patterns of positive impact (Table3)

Establishment of Specialized Medical Services

One of the notable achievements of Sudanese health professionals is the establishment of specialized medical services that cater to diverse health needs. This includes advanced surgical

services, maternity and pediatric care, and chronic disease management. By setting up specialized clinics and hospitals, these professionals have significantly improved access to quality healthcare for populations in secured estates and nearby regions. For instance, the introduction of cardiology, oncology, and orthopedic services addresses specific health challenges, reducing the burden on general practitioners and enhancing overall health outcomes.

Coverage of the Health System

The Sudanese health system has undergone extensive reforms to improve coverage and accessibility. Health professionals have been instrumental in promoting health insurance schemes that provide financial protection for individuals and families. Additionally, efforts to decentralize healthcare services have enabled communities to access medical care closer to home. The improvements in the coverage of the health system have played a vital role in ensuring that underserved populations receive necessary healthcare services, thereby promoting equity and inclusivity.

Training Empowerment

Investment in training and empowering health professionals has been a cornerstone of the improvements seen in Sudan's healthcare system. Continuous professional development programs, partnerships with international health organizations, and community-based training initiatives have equipped health workers with the latest knowledge and skills. The focus on training has encouraged a culture of learning and collaboration, allowing professionals to stay current with medical advancements and best practices. This empowerment translates into better patient care, enhanced service delivery, and the capacity to address emerging health challenges effectively.

New Technologies

The integration of new technologies has revolutionized healthcare delivery in Sudan and its neighboring areas. Sudanese health professionals have embraced telemedicine, electronic health records, and data analytics to streamline services and enhance patient outcomes. Telemedicine, in particular, has mitigated barriers to care, allowing patients in remote areas to consult specialists without needing to travel long distances. These technological advancements have optimized resource allocation and improved the efficiency of healthcare systems, leading to timely interventions and better management of diseases.

Establishment of New Health Facilities

The proactive approach taken by health professionals has led to the establishment of new health facilities across secured estates and neighboring regions. These facilities range from community health centers to specialized hospitals, designed to meet the evolving health demands of the population. By expanding access points for healthcare, these professionals have facilitated the timely diagnosis and treatment of various conditions. Furthermore, these new facilities often serve as hubs for health education and community

engagement, empowering individuals to take charge of their health.

Better Planning and Health Outcomes

Improved planning strategies have defined the trajectory of Sudan's healthcare advancements. Health professionals have engaged in comprehensive health assessments and community needs analyses, which have informed policy decisions and resource allocation. This data-driven approach ensures that health initiatives are tailored to address specific population needs, thus optimizing health outcomes. As a result, there has been a noticeable decline in preventable diseases, increased vaccination rates, and enhanced maternal and child health indicators.

Long-Term Positive Impact of the Displacement of Health Professionals in Sudan

The ongoing conflict in Sudan has resulted in the displacement of many health professionals to more secure regions such as the Red Sea, Kassala, Gadarif, Nile Valley, and Northern states. This movement, while initially seen as a disruption, has had several long-term positive impacts on the healthcare systems of these regions.

Strengthened Healthcare Infrastructure

The arrival of displaced health professionals has led to a significant enhancement of healthcare infrastructure in these states. New clinics, hospitals, and specialized health units have been established to accommodate the increased number of patients and the variety of services provided. This has led to a more robust and decentralized healthcare system capable of serving a broader population base [8,9].

Improved Health Workforce Capacity

The influx of trained healthcare workers has bolstered the workforce capacity in these regions. Many of the displaced professionals have taken on roles in teaching and mentoring local healthcare providers, improving the skills and capabilities of the existing workforce. This transfer of knowledge has the potential to create a more resilient healthcare system in the long term [8,9].

Introduction of New Specialties and Services

Many of the displaced professionals come from diverse medical backgrounds, bringing with them expertise in specialties such as cardiology, neurology, and advanced surgical techniques. The introduction of these specialties has filled gaps in healthcare services that previously required patients to travel to larger cities. This has improved access to specialized care and reduced the burden on tertiary healthcare facilities [8].

Increased Healthcare Access and Equity

The expansion of healthcare services to rural and underserved areas in the receiving states has improved healthcare access and equity. Displaced professionals have been instrumental in setting up health outreach programs, mobile clinics, and community health initiatives. These efforts have increased the availability of preventive and primary healthcare services in regions that were previously neglected [9].

Enhanced Public Health Initiatives

The presence of experienced health professionals has strengthened public health initiatives such as vaccination campaigns, maternal and child health programs, and chronic disease management. These initiatives have had a positive impact on health outcomes, including reduced incidence of preventable diseases and improved management of conditions like diabetes and hypertension [8,9].

Development of Health Education and Training Programs

The displaced health professionals have contributed to the development of new health education and training programs in local medical schools and training centers. This has included the introduction of advanced training modules in emergency medicine, infectious disease control, and community health. These programs will continue to produce well-trained healthcare workers long after the conflict has ended, contributing to the sustainability of healthcare improvements [8,9].

Long-term Economic Benefits

The establishment of new health facilities and services has had positive economic effects in the host states. It has created employment opportunities, not only for healthcare workers but also for support staff, suppliers, and contractors. This economic boost has contributed to the overall stability and development of these regions [8].

The Positive Impact of Displacement of Sudanese Health Professionals on Neighboring African Countries, (Table1)

The recent displacement of Sudanese health professionals has, under incredibly challenging circumstances, led to a remarkable ripple effect across neighboring African countries. While displacement is often associated with loss and hardship, in this case, it has catalyzed significant advancements in the healthcare landscape of the host nations, reaffirming the resilience and adaptability of health systems in the face of adversity. First and foremost, the influx of hundreds of highly specialized consultants in various medical disciplines has immensely enriched the healthcare workforce in neighboring countries. Sudan has long been known for producing skilled medical professionals, and their relocation has introduced a wealth of knowledge and expertise that was previously unavailable. This has not only enhanced the quality of care but has also facilitated the adoption of advanced medical practices and technologies.

The establishment of several new health facilities is another significant outcome of this situation. These new centers not only serve the immediate needs of the population but also contribute to creating a more robust healthcare infrastructure. Many of these facilities have been equipped with state-of-the-art medical technologies and are staffed by a mix of local and Sudanese health professionals, fostering an environment of learning and collaboration. This cross-pollination of ideas and practices is invaluable in elevating the standard of care available to patients in

these regions. Furthermore, the training of local health cadres has proven to be one of the most impactful aspects of this displacement. Sudanese specialists are not just providing care; they are also deeply involved in capacity-building initiatives. By mentoring and training local health workers, they are ensuring the sustainability of healthcare improvements. This transfer of skills is vital, as it empowers local teams to continue delivering high-quality services long after the Sudanese consultants have settled into their new roles.

In addition to direct healthcare benefits, the integration of Sudanese health professionals has led to enhanced collaboration between neighboring countries. This has fostered a spirit of unity and shared purpose in addressing regional health challenges. International partnerships have blossomed as these professionals bring their expertise to bear on common issues like communicable diseases, maternal and child health, and public health emergencies. Moreover, this phenomenon has also stimulated discussions around the need for policy reforms that support the mobility of healthcare professionals across borders. As neighboring countries recognize the benefits of having highly specialized consultants within their healthcare systems, there is a growing acknowledgment of the importance of implementing frameworks that allow for better integration and recognition of qualifications.

Conclusions

- a. The positive impact of Sudanese health professionals on secure areas and neighboring countries is diverse. These professionals have significantly improved healthcare delivery through their expertise, establishment of specialized services, expansion of health system coverage, commitment to training, integration of new technologies, development of new health facilities, and strategic planning. As Sudan continues to face health challenges, the ongoing contributions of its health workforce are essential for achieving improved health outcomes and building resilient communities.
- b. While the displacement of health professionals due to conflict is generally seen as a negative consequence, the movement of these professionals to more secure areas in Sudan has had several long-term positive impacts. These include strengthened healthcare infrastructure, improved workforce capacity, introduction of new specialties, and enhanced public health initiatives. As the situation in Sudan evolves, these changes may provide a foundation for a more resilient and equitable healthcare system in the affected regions.
- c. The displacement of Sudanese health professionals arose from dire circumstances, and the resulting impact on neighboring African countries has been profoundly positive. The influx of specialized knowledge, the establishment of new healthcare facilities, the training of local health workers, and the strengthening of regional healthcare collaborations are just a few of the ways this situation has translated into advancements in healthcare. As we move forward, we must support these initiatives and continue to harness the potential

of displaced health professionals in building sustainable health systems across Africa.

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