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Research Article

Short Medical Missions During Wartime: The Sudanese American Medical Association's Experience in Sudan in 2024

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Abstract

Background: The armed conflict that erupted in Sudan in April 2023 has severely disrupted the country's healthcare system, displacing millions and straining the already fragile health infrastructure. Port Sudan, now functioning as the de facto capital, has experienced a significant population surge. In response, the Sudanese American Medical Association (SAMA) launched a series of short-term humanitarian medical missions in 2024 to support local healthcare delivery. This article outlines the implementation and key activities of these missions, including medical supply delivery and healthcare provider training.

Methods: Three four-day missions were carried out in Port Sudan, led by US-trained Sudanese physicians. Local needs were evaluated in coordination with hospital departments. Because of import restrictions, mission participants hand-carried medical supplies and distributed them to two public hospitals. Clinical training was provided through a hybrid format, combining in-person workshops at hospitals and the Dr. Bushra Ibnauf Center for Learning and Humanitarian Relief Support with virtual lectures delivered by international experts.

Results: The missions collectively delivered approximately USD 88,000 worth of medications and medical supplies, while also providing targeted training to 138 healthcare professionals in anesthesiology, emergency care, and trauma surgery. The training was tailored to address identified local needs and was conducted in small-group, hands-on formats.

Conclusion: SAMA's model illustrates how short-term, diaspora-led missions can support healthcare systems in conflict zones. The missions tackled critical gaps by prioritizing flexible logistics, local partnerships, and hybrid education while adjusting to complex operational constraints.

Keywords: medical missions, Port Sudan, medical supplies, training, capacity building

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1. Introduction

The armed conflict that erupted in Sudan on April 15, 2023, has led to the near collapse of the country's healthcare system, triggering a widespread humanitarian crisis. More than 12 million people have been displaced either internally or across borders [1], placing immense strain on the healthcare infrastructure in Sudan and neighboring countries [2]. In Khartoum State alone, 47% of hospitals (41 out of 87) were damaged within the first 500 days of conflict, impacting an estimated one-third of the local patient population [3]. Health facilities and workers have experienced approximately 60 attacks, leading to significant casualties and disruptions in services [4]. Mortality in Khartoum during the conflict period surpassed 61,000 deaths, indicating a 50% increase compared to pre-war levels [5].

The breakdown of preventive services, including vaccination and disease surveillance, has led to widespread outbreaks of cholera, malaria, measles, and dengue fever across multiple states [6]. Medical education has also been severely affected due to interrupted curricula, disrupted clinical training, and limited internet access for e-learning [7].

Amid this crisis, the Sudanese American Medical Association (SAMA), a nonprofit organization with offices in the United States since 2008 and Sudan since 2017, has mobilized to support critical healthcare needs in Port Sudan. The city, now serving as the de facto national capital, has seen a surge in population due to displacement, placing further pressure on its limited health infrastructure. SAMA has moved its operations to Port Sudan and has launched a series of short-term medical missions named in honor of the late Dr. Isam Osman. These missions aim to enhance health system capacity by providing life-saving medications, medical supplies, and clinical training.

This article outlines the implementation and key activities of the 2024 SAMA humanitarian missions in Port Sudan, focusing on medical supply delivery and healthcare provider training in the context of ongoing conflict.

2. Methods

In 2024, the SAMA conducted three short-term medical missions in Port Sudan, Sudan. These missions aimed to address critical gaps in healthcare delivery by facilitating the involvement of US-trained Sudanese physicians, supplying essential medications and medical supplies, and enhancing the capacity of local healthcare providers through training. This section describes the core activities involved in planning and implementing these missions, including needs assessment, team mobilization, procurement, and training delivery.

2.1. Logistics and local coordination

The success of each mission was supported by SAMA's permanent presence in Port Sudan through the Dr. Bushra Ibnauf Center for Learning and Humanitarian Relief Support. This center acted as the operational base for local planning and coordination. Staff located at the center played a crucial role in identifying priority needs through direct engagement with hospitals, local healthcare providers, and governmental health authorities. The center also enabled communication with local partners, aided in navigating administrative requirements, and coordinated mission logistics on the ground, including scheduling training sessions and ensuring the proper delivery of medical supplies.

2.2. Local needs assessment

A needs assessment for each mission was conducted through direct coordination with managers and department heads at the targeted hospitals in Port Sudan. SAMA staff engaged with clinical leadership in departments relevant to each mission's scope—such as anesthesiology, emergency medicine, intensive care, and surgery—to identify priority gaps in resources and training. Hospital teams were asked to submit detailed lists of essential medications, medical supplies, and equipment that are currently lacking. In parallel, they were requested to outline the specific training needs of their healthcare professionals, including procedural skills, clinical protocols, and emergency management topics. These inputs guided the planning and customization of each mission's supply procurement and educational content.

2.3. Mission activities

Each mission involved a four-day deployment during which US-trained Sudanese physicians traveled to Port Sudan to deliver life-saving supplies and provide clinical training for local healthcare professionals. The supplies—including medications and consumables—were donated by international partners and hand-carried by the visiting physicians due to logistical challenges with formal shipment. Upon arrival, these supplies were distributed to two major public hospitals—Osman Digna Hospital and Port Sudan Teaching Hospital—in coordination with the hospital's leadership and based on previously identified needs.

In addition to delivering supplies, each mission included training sessions to enhance the professional development of local healthcare providers. The training utilized a hybrid model that combined in-person sessions at the Dr. Bushra Ibnauf Center for Learning and Humanitarian Relief Support and participating hospitals with virtual lectures conducted via Zoom. These sessions covered both theoretical content and practical demonstrations. Global experts from outside Sudan also joined remotely to share their knowledge and perspectives.

3. Results

In 2024, the SAMA implemented three short-term medical missions in Port Sudan, each aligned with a distinct clinical specialty. Collectively, these missions enabled the delivery of essential medications and medical supplies valued at approximately USD 88,000 to two major public hospitals. Meanwhile, 138 local healthcare professionals received specialized training during the three deployments. The scope and scale of training varied by mission and reflected the clinical focus and locally identified needs. Table **1** provides a summary of mission-specific activities and outputs.

4. Discussion

The three short-term humanitarian medical missions organized by the SAMA in 2024 were designed without direct clinical service delivery, setting them apart from many traditional short-term medical missions.

Organizations such as Samaritan's Purse and Medical Missions Outreach typically conduct missions that include direct clinical care, such as routine checkups, dental services, and minor surgeries, often delivered by international volunteers for periods of one to four weeks [8, 9]. In contrast, SAMA's missions focused on capacity building and refrained from offering clinical care due to legal, logistical, and security constraints.

Table 1: Details of the Dr. Isam Osman Humanitarian Missions organized by the Sudanese American Medical Association in Port Sudan, Sudan, in 2024.

Mission focus	Dates	Visiting doctor	Estimated value of supplies (USD)	Number of healthcare professionals trained in person
Anesthesiology	February 24–27, 2024	Dr. Amir Elhassan, Consultant Cardiothoracic Anesthesiologist	$23,000	36
Critical care and Emergency medicine	August 4–7, 2024	Dr. Yasir Hamad, Critical Care Physician	$63,000	52
Trauma Surgery	November 2–5, 2024	Dr. Mohamed Abdelhameed, Trauma Surgeon	$2,000	50
Total			$88,000	138

A key difference lies in staffing. Many missions deploy foreign volunteers unfamiliar with the local context, which has been criticized for creating ethical concerns such as language barriers, inappropriate treatment, and insufficient follow-up [8]. SAMA addressed this by deploying US-trained Sudanese diaspora physicians, enhancing cultural and linguistic appropriateness, and facilitating smoother coordination with local health authorities.

While Médecins Sans Frontières (MSF) is recognized for establishing semi-permanent clinical infrastructure and providing long-term care in humanitarian contexts, SAMA's model reflects MSF's principles of neutrality and local legitimacy [10]. SAMA collaborated closely with public hospitals and depended on local partners through the Dr. Bushra Ibnauf Center for Learning and Humanitarian Relief Support, echoing MSF's focus on local engagement for operational security [10, 11].

SAMA faced several challenges common to humanitarian missions:

(i) Logistical challenges included barriers to importing medical supplies due to restricted air freight and customs clearance. These issues have been addressed by sourcing medications locally and hand-carrying critical supplies. This strategy has avoided reliance on foreign donations or international shipping, which other studies have criticized [8].

(ii) Bureaucratic challenges arose concerning visa restrictions and government approvals for foreign medical personnel. SAMA tackled this by recruiting US-trained Sudanese diaspora physicians who held Sudanese passports, thus reducing administrative delays and enhancing acceptability among local authorities.

(iii) Financial limitations constrained the scope and duration of missions. In response, SAMA conducted short-duration, high-impact missions and partnered with international donors to provide medications and consumables, reducing the overall cost burden.

(iv) Operational challenges included fragile data systems, a lack of baseline health metrics, and limited capacity for outcome tracking, which has also been reported in other mission settings [9, 12]. SAMA relied on direct engagement with hospital leadership for real-time needs assessment.

Despite these limitations, SAMA's experience shows that short-term, well-targeted interventions can still meaningfully contribute to health system support during emergencies. Future efforts may benefit from deeper integration with long-term recovery plans, more formal monitoring and evaluation tools, and strategic partnerships with national authorities and international humanitarian organizations.

5. Conclusion

SAMA's short-term humanitarian medical missions in Port Sudan supported the local healthcare system by delivering critical medical supplies and offering in-service training for healthcare professionals. The missions demonstrated a practical and adaptable model for operating in conflict-affected environments, utilizing diaspora-led teams, local procurement, and hybrid educational strategies to navigate logistical and bureaucratic challenges. These efforts strengthened capacity in a highly constrained setting and provided valuable insights for similar humanitarian initiatives.

Declarations

Acknowledgements

None.

Ethical Considerations

This study did not involve human subjects, patient data, or direct clinical care. All activities were limited to healthcare professional training and the delivery of medical supplies, conducted with the approval and coordination of local hospitals and health authorities in Port Sudan, Sudan. As such, institutional ethics approval was not required. All procedures adhered to ethical principles, including the Declaration of Helsinki and respect for local protocols.

Competing Interests

None declared.

Availability of Data and Material

All data collected and analyzed during this study are available to the corresponding author upon reasonable request.

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None.

Abbreviations and Symbols

SAMA: Sudanese American Medical Association
MSF: Médecins Sans Frontières

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