



Hussein Suleiman Abusalih (1930–2021): First Neurosurgeon and Former Minister of Health of Sudan

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Key words

- Abusalih
- African neurosurgery
- Global neurosurgery
- Neurosurgery
- Sudan

Abbreviations and Acronyms

PAANS: Pan-African Association of Neurosciences

PUO: Pyrexia of unknown origin

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INTRODUCTION

Hussein Suleiman Abusalih (1930–2021) is often cited as Sudan's first neurosurgeon. Dr. Abusalih is noted for his research in brain and spine surgical procedures and for developing Sudan's first neurosurgery training curriculum and program. As a physician, Dr. Abusalih is renowned among his peers as a cofounder of the Pan-African Association of Neurological Sciences (PAANS), as well as many other professional associations. He was a well-respected spokesperson for neurosurgeons and doctors.

EDUCATION (1947–1950)

Dr. Abusalih was born in Omdurman, Sudan, in 1930 (Figure 1).¹ He attended Almorada Primary School in the Almorada neighborhood and also studied at the local Quranic school. Growing up in Almorada, Dr. Abusalih interacted with and learned from many Sufi Muslims

■ **BACKGROUND:** This historical account reviews the course and lasting impact of Dr. Hussein Suleiman Abusalih (October 5, 1930 to December 6, 2021) in neurosurgery.

■ **METHODS:** The conception of this project was sparked by the discovery of original scientific and bibliographical information about Dr. Abusalih, a prolific neurosurgeon and political figure in his home country of Sudan. This project aims to thoroughly describe the impact of Dr. Abusalih in his home country and in the field of neurosurgery.

■ **RESULTS:** From humble beginnings, Dr. Abusalih traveled extensively to pursue his passions in education and medicine. He received his neurosurgical training with Dr. Ahmed El-Banhawi of Ain Shams University. Afterward, he returned to Sudan to become the nation's first neurosurgeon and formed the first neurosurgical department in the country in addition to being appointed as the Minister of Health of Sudan. Partnering with several neuroscientists and fellow physicians, Dr. Abusalih was one of the founders of the Pan African Association of Neurological Sciences and worked extensively for various indigenous populations. As a prolific researcher and educator, Dr. Abusalih authored many presentations, publications, and various books, such as "Inside the Ministry of Health" and "Neurosurgery in the Seventies." Dr. Abusalih was a prominent figure in both medical and political fields.

■ **CONCLUSIONS:** Our article provides a look into the life and impact of Dr. Abusalih as a prominent political pioneer and the first neurosurgeon in Sudan.

whose ascetic way of life encouraged him to remain humble and disciplined.¹ Studying at his local Quranic school would also strengthen his Muslim values, which included a great hatred for injustice and a repulsion of any actions that dishonored individuals or took away their dignity.¹ This desire to right wrongs and become a beacon of justice that manifested at a young age would later play a role in his entry into politics. Dr. Abusalih continued his schooling at the Wadisynda Secondary School (high school equivalent).¹ Upon completion of the college entrance examination in Sudan, which he passed with distinction and with the highest grades, Dr. Abusalih initially applied to the College of Engineering at the University of Khartoum (Figure 2). At his headmaster's behest, he switched fields and applied to the College of

Mathematics. However, his father wanted him to study medicine, and he consequently began his medical education at the Kasr Alainy Medical School in Cairo, Egypt.¹

Kasr Alainy Medical School (1951–1957)

Dr. Abusalih began his medical training in 1951 at Kasr Alainy Medical School, a center of excellence for medicine in Cairo, Egypt, through a scholarship from the Egyptian government (Figure 3).¹ Medical school in Egypt consisted of 4 years of preclinical work, termed "Preliminary Natural Sciences," composed of chemistry, zoology, botany, and physics in the first year. In his second and third years, he studied physiology, biochemistry, anatomy, and histology, followed by a fourth year of pathology, pharmacology, parasitology, and



Figure 2. University of Khartoum.

for Part One of the Fellowship of the Royal College of Surgeons (F.R.C.S.) and soon received a passing mark.¹ After being guided by Professor Nichols and Mr. Bayomi through his surgical rotation, Dr.

Abusalih left for the United Kingdom in 1964. In 1964, he was placed at Saint Georges Hospital, where he trained in the surgical ward under Mr. Victor Riddle, who oversaw the ward and was assisted in surgeries by Mr. Richard Let.¹ On May 13, 1965, Dr. Abusalih passed the final portion of the fellowship examination and became a Fellow of the Royal College of Surgeons.¹

Western Sudan, Darfur Province

After receiving his admission to the Royal College of Surgeons, Dr. Abusalih was then awarded the title of Surgeon of the Darfur Province in Western Sudan and assigned to Al-Fashir Hospital.² During his time in Darfur, he oversaw multiple surgeries and operated on many patients. Cases in the region often included trauma to the abdomen, renal stones, goiter, Madura foot, and herniations. While in Darfur, Dr. Abusalih also began to lecture and host presentations at Al-Fashir Secondary High School.²

NEUROSURGERY TRAINING IN EGYPT (1968–1971)

While Dr. Abusalih was in Darfur, the Sudanese Ministry of Health began

implementing subspecialty departments, and Dr. Abusalih was chosen to begin a Neurosurgery Department in Sudan.² At the time, Professor Ahmed Al-Banhawi, a pioneer in the field of neurosurgery in Egypt, was visiting Khartoum for the Arab Medical Conference in 1968. Dr. Abusalih met with Professor Al-Banhawi, who offered him a position with the neurosurgery team in the Department of Neurosurgery at Ain Shams University in Cairo, Egypt. Dr. Abusalih was thus assigned to the Neurosurgery Department at Al-Damardash Hospital at Ain Shams University.²

THE FIRST NEUROSURGERY UNIT IN SUDAN (1971)

After completing neurosurgery training in Egypt under the guidance of Professor Al-Banhawi, Dr. Abusalih returned to Sudan in 1971 to establish the first neurosurgery ward in Sudan.² Using connections from the Ministry of Health, he wrote to senior surgeon Dr. Ahmed Adel Aziz, who led the Cardiac Surgery unit at Al-Shaab Hospital in Khartoum and was also involved in efforts to build a new operating room in the hospital. Dr. Aziz was instrumental in preparation of the physical unit as he agreed to share an operating room with the fledgling neurosurgery unit.²

Dr. Abusalih called on several prominent physicians including Professor Dawood Mustafa, senior physician; Dr. Khalid Mohammed Alhaj, senior radiologist; Dr. Abdulla Yousif, neuroradiology; and Dr. Taha Baashar, who was at the Ministry of Health and could allocate money for the neurosurgery unit's operational costs.²

While the Department of Neurosurgery was in its infancy, Dr. Abusalih would operate out of Khartoum Hospital's operating room. During this time, he would still tend to head-injured patients at Khartoum Hospital.² When the Department of Neurosurgery became operational at Al-Shaab Hospital, it began with only 4 beds. Eventually, the department increased to 48 total beds through an increase in operational budget from the Ministry of Health.² The first 2 medical officers to join the unit were Dr. Ali Abdel Rahman and Dr. Younis Salih. Dr. Abdel Rahman and Dr. Salih were



Figure 3. Dr. Abusalih's graduation from Kasr Alainy Medical School in Cairo, Egypt.

sent abroad for training, with Dr. Abdel Rahman being sent to Sweden and Dr. Salih being sent to Russia for postgraduate training in neurosurgery.³ Other members of the team who would later join and be sent abroad for further training included Muhsin Hussein (United Kingdom), Mohamed Abdel Rahman (Sweden), Abdel Rahman Alzaki (Russia), Jalal Elnour (China), Ibrahim Mahjoub (Egypt), Safwat Matias (Egypt), Al Hadi Bakhiet (The Netherlands), Mohammed Mohyaldien Abusaif (U.K.), and Mohammed Osman Hamid (United States and Egypt).³ The aforementioned would become not only the first neurosurgery team in Sudan but also pioneers of Sudanese neurosurgery at large.

While Dr. Abusalih was caring for patients and operating, Dr. Abdulla Yousif and Dr. Abdel Rahman Al Lidir began the Department of Radiology at the institution, which was incorporated into the Neurosurgery Unit, allowing the ward to incorporate brain and spinal surgery.² Dr. Abusalih continued to oversee operations himself and was on call for approximately 7 years until Dr. Ali Abdel Rahman, Dr. Younis Salih, and Dr. Muhsin Hussein returned from training abroad.² Dr. Abusalih at this time completed a book on neurosurgeries performed in Khartoum Hospital and in Sudan in general entitled *Neurosurgery in the Seventies*.⁴

Dr. Abusalih continued to lecture at various universities as a professor including the University of Khartoum while simultaneously serving as an examiner for physicians preparing to enter neurosurgery; most physicians to become neurosurgeons in Sudan between 1971 and 1985 undertook examinations prepared by Dr. Abusalih.²

His efforts also spanned across countries as he was a pivotal member in the founding of the Pan-African Association of Neurological Sciences (PAANS) in 1972 in Nairobi, Kenya.¹ PAANS was founded after a tumor symposium with the goal of providing up-to-date information on neurosurgery, neurology, and disorders affecting the nervous system across the African continent. To this end, PAANS developed and oversees the *African Journal of Neuroscience*, a peer-reviewed journal that releases publications biannually,

intracontinental conferences, and newsletters.⁵ As such, PAANS is the governing body for the advancement of neuroscience, neurosurgery, and neurology in Africa.

THE PEOPLE'S UPRISING AND THE MINISTER OF HEALTH (1985)

In 1983, Dr. Abusalih was elected as the President of the Doctor's Syndicate for Khartoum and for the Al-Shaab Hospital Complex, which would form the basis for his future political career as Minister of Health.⁶ The Al-Shaab Hospital Complex consisted of more than 500 specialists and medical officers.⁶ Because the government was being pressured by the International Monetary Fund and the World Bank to reform, medical institutions suffered pay cuts, and in turn, the health system began to collapse and deteriorate.⁶ Several other institutions began to collapse as well, and this caused shortages of necessities such as gasoline and bread.⁶

This shortage of basic necessities caused frustration and anger, resulting in large public demonstrations. In March 1985, demonstrators consisting of students from the Student Unions at Omdurman University and the University of Sudan for Technology and Science (previously Khartoum Polytechnic) took to the streets.⁶ This crowd consisted of not

only student demonstrators but also a large crowd of homeless children called "shammasha." The demonstrators were met with force and aggression, resulting in some being killed and many being injured. In response to the aggression against demonstrators, physicians from Khartoum Hospital called for a strike and for civil mutiny.⁶

The Doctor's Union was reformed at this point and joined forces with 6 other unions: the Engineers' Syndicate, Lawyers' Syndicate, Banks' Syndicate, Social Security Fund Syndicate, and Lecturers of University of Khartoum Syndicate.⁶ These groups then came together in support of the strike proposed by the Khartoum Hospital Doctors' Union and joined the strike as well.⁶ The demonstration led by professionals from the 6 unions was called the "People's Uprising," and its message quickly grew to encompass the entire nation.⁶ On March 31, 1985, Dr. Abusalih affirmed support for the civil strike on a live American broadcast. He, along with several other leaders, was detained for 4 months until the deposition of the Nimeiri regime.⁵

After being released from prison as a political detainee, Dr. Abusalih was elected as Minister of Health for the Transitional Government of 1985.⁶ During his term as Minister of Health, the infamous famine that affected 8.4 million people occurred.⁷ Dr. Abusalih assisted with

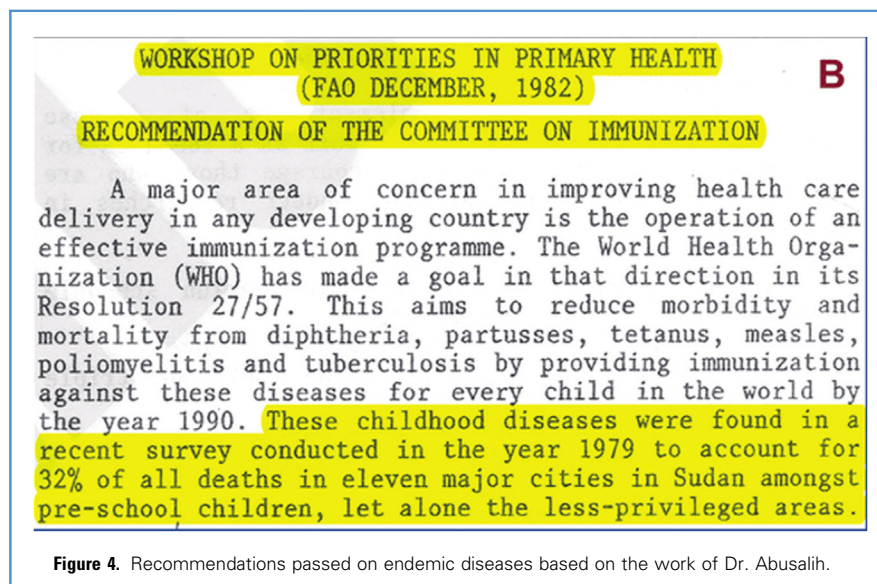




Figure 5. Dr. Abusalih speaking to the United Nations.

efforts in organizing international aid and relief efforts. With the introduction of the Transitional Government of 1985, he was persuaded to join the Democratic Union Party (DUP) and to run for a seat in the Shendi province/constituency, which he won overwhelmingly with 25,000 votes.⁶ With votes secured, Dr. Abusalih was appointed Minister of Health for another 2 years.⁶ As Minister of Health, one of his greatest achievements was creating a vaccination system against diseases including polio, measles, whooping cough, diphtheria, and tetanus (Figure 4) alongside the United Nations Children's Fund.^{8,9} Dr. Abusalih also oversaw the building of 3 hospitals in Omdurman, in Al-Fashir in the Darfur province (which was annexed by the Al Fashir University and used as a teaching hospital) and in

Kassala (which also became a teaching hospital via a grant from King Fahd of Saudi Arabia).⁶ Finally, using a grant donated by the Dutch government, he rebuilt the medical storage facility.⁶

THE NEW REGIME AND MINISTER ROLES (1988–1999)

In 1988, after serving as Minister of Health for 3 years, Dr. Abusalih was nominated for the role of Minister of Foreign Affairs, which he accepted (Figures 5 and 6).⁶ A year later, the Bashir regime would overthrow the government in place and would come into power via military coup.⁶ The coup suspended several laws in place from the previous regime, including the right to form political parties, and dissolved any political and professional associations, including teachers' unions, associations at institutions of higher learning like the University of Khartoum, and any trade unions.¹⁰ The coup regime then placed its own members on the Sudanese Supreme Court and Supreme Judicial Council, thereby blocking any reformation to the bans it imposed. This move would come to light when several prominent leaders of banned trade unions and associations presented a memorandum to the Court and Council and were subsequently arrested.¹ The coup therefore halted any progress that professional associations and trade unions had been making, not only for

their members, but the greater Sudanese society.

Given his prior experience as Minister of Health and Foreign Minister, Dr. Abusalih was called upon to also serve in the Bashir government in multiple other roles such as Minister of Housing in 1990.⁵ As Minister of Housing, he succeeded in improving the efficiency of the housing system, providing homes for many.

MINISTER OF SOCIAL DEVELOPMENTS (1991–1992)

As Minister of Social Developments, Dr. Abusalih sought to tackle many projects concerning housing infrastructure, the deteriorating health care system, education, and the economy.⁶ Unfortunately, in 1992, the economy plummeted due to privatization. This halted several projects under the Ministry of Social Developments and posed a massive obstacle for social welfare projects.⁶ Low-income groups and the middle class consequently suffered due to these economic changes.⁶

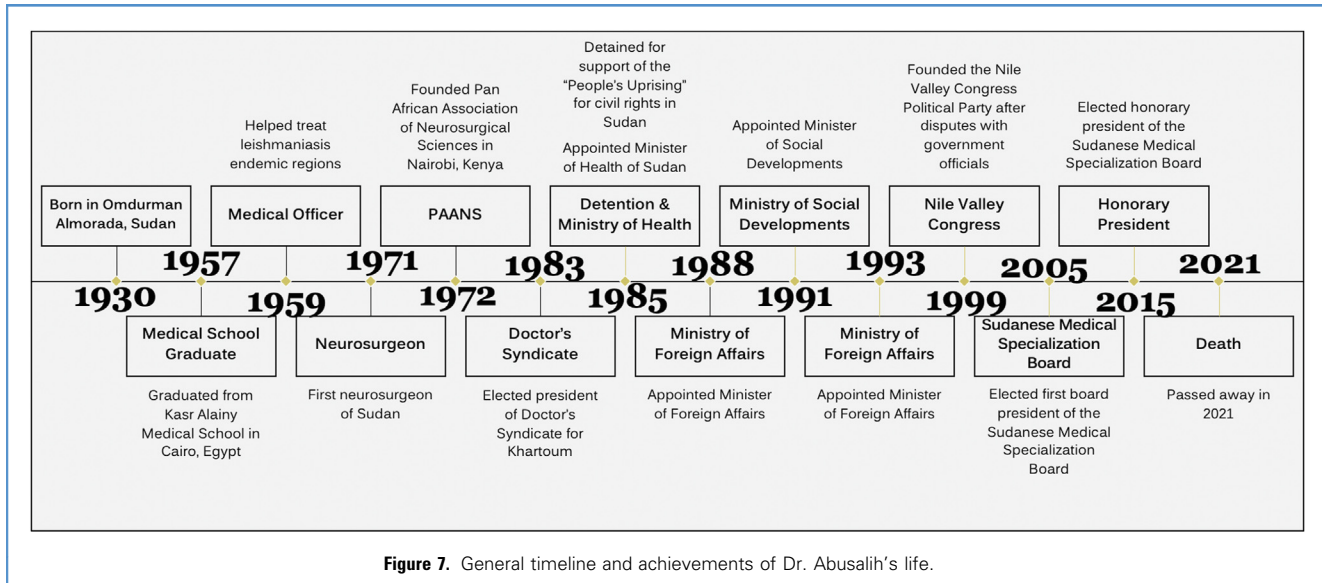
MINISTER OF FOREIGN AFFAIRS PART 2 AND RETURN TO PRACTICE (1993–1995)

In 1993, Dr. Abusalih was again appointed Minister of Foreign Affairs for the second time under a different government.¹¹ His tasks as Minister of Foreign Affairs included soothing relations with countries in the West due to the Islamization of the government under the Bashir regime.¹¹ Relations were equally as tense with Arab countries since Sudan was a member of the Arab League; this tension was due to the assumption that Sudan supported the invasion of Kuwait by Iraq.¹¹ Because relations with the West did not improve, Dr. Abusalih sought to build and maintain relationships with the Global South including countries like China, India, Iran, Pakistan, Indonesia, and Malaysia. Some of these ties have continued to the present day.^{11,12}

As Minister of Foreign Affairs, Dr. Abusalih was also a participant in both Abuja Peace Talks in 1992 and 1993.^{11,12} Unfortunately, both sets of negotiations deteriorated due to sanctions against the Sudanese government by the West and political



Figure 6. Dr. Abusalih meeting President Jimmy Carter in Geneva.



unrest in the country.^{11,12} In 1995, he resigned from politics to return to his medical practice. He returned to the Ibn Khaldoon Private Hospital where he ran, consulted, and operated a clinic.¹²

NILE VALLEY CONGRESS (1999)

In 1999, after ideologic conflicts with the National Congress Party, the party of the Bashir regime, Dr. Abusalih resigned from the party and founded the Nile Valley Congress.⁶ This organization sought to establish ties with Egypt in order to help develop both nations. The organization failed to thrive, despite overwhelmingly positive support from Sudanese nationals.⁶

SUDANESE MEDICAL SPECIALIZATION BOARD AND THE SUDANESE ASSOCIATION OF NEUROSURGEONS (1998–2015)

In 1998, the Ministry of Health began the Sudanese Medical Specialization Board, which sought to train physicians in various medical specialties and subspecialties. In 1999, neurosurgery was officially recognized as a subspecialty by the Ministry of Health, and due to Dr. Abusalih's previous work training physicians at the Al-Shaab Hospital in the specialty, he was designated as the neurosurgical board's first

President.¹³ He continued to lead the organization from 2009 until 2015 when he retired and was selected as its first honorary president.¹³

DEATH AND LEGACY

On December 6, 2021, Dr. Hussein Suleiman Abusalih passed away. His legacy continues today as seen through several currently practicing Sudanese neurosurgeons who underwent training under Dr. Abusalih and the establishment of the Sudanese Society of Neurosurgeons.⁶ Dr. Abusalih was the first neurosurgeon in Sudan and pioneered the way for all neurosurgeons afterwards. He also played a pivotal role in the health of his country, helping to establish various health protocols for treatment of endemic diseases by working with organizations such as World Health Organization and United Nations Children's Fund. By radically impacting the medical landscape of his country, his name became distinguished and noteworthy across the African continent, which contributed and resulted in Dr. Abusalih helping found PAANS. His contributions to his country extend beyond medicine as displayed by his political activism through which he was able to strive toward furthering democracy and proper representation for

all. Through his involvement in the Sudanese Ministry of Health, the Doctors Union, Nile Valley Congress, and other causes, Dr. Abusalih's dedication to bettering his country is unmistakable. Our article summarizes some of his countless contributions to the people of Sudan and the world at large in an effort to honor Dr. Abusalih's legacy as a pioneer in the history of medicine (Figure 7).

Countless lessons can be learned from Dr. Abusalih's life. One of the most salient lessons is Dr. Abusalih's humility. Despite being an accomplished physician by the time he began his training with Dr. Al-Banhawi, Dr. Abusalih displayed humility as he began training from scratch in a new field. Additionally, Dr. Abusalih always spoke with the utmost respect when reminiscing on his training with Dr. Al-Banhawi and credits him for accomplishments as a neurosurgeon; this display of humility and gratitude is a reminder to pay homage to one's teachers. Furthermore, although Dr. Abusalih began an entire neurosurgery program singlehandedly, his ward began with a single operating room. Dr. Abusalih's display of perseverance can encourage physicians in developing nations who are wanting to begin new programs of their own.

Overall, Dr. Hussein Suleiman Abusalih's contributions to both the medical and

political landscapes of Sudan and Africa as a whole are numerous and profound.

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