Historical Perspectives

Building Gaafar Ibnauf Children's Hospital: Unprecedented story

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Professor Gaafar Ibnauf Suliman

Gaafar Ibnauf Children's Hospital, Khartoum

Professor Gaafar Ibnauf Suliman, born in 1942, completed his university studies at the University of Khartoum (U of K) in 1967. He specialized in paediatrics in UK in 1973, where he got the MRCP and the DCH and was later awarded the FRCP and the FRCPCH. He continued to work in Sudan since then where he was also awarded an MD degree (by research) from U of K, Fellowship of the Sudan Medical Specialization Board (FSMS) and Honorary Doctoral Degree (PhD) from Ahfad University for Women. Because of his dedicated efforts leading to the establishment of the first paediatric specialized hospital in Sudan, the hospital was named after his name and he was awarded the Medal of Achievement by H. E. Omar al-Bashir, the President of Sudan. He worked as the Chairman of the Board of Directors at Gaafar Ibnauf Children's Hospital (GICH), Chairman of the Board of Paediatrics and Child Health in the Sudan Medical Council, and as the Senior Paediatrician at the Ministry of Health.

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Prof. Gaafar continued his work building and equipping other paediatric hospitals in the Sudan, be it in the North, West, East, Center or the South. He developed heath programs for Eastern Sudan and Eastern Equatoria among others. He furnished 60 Centers in Khartoum and opened a unit at Fath-Elrahman Elbasheer Referral Centre for educating mothers of healthy children on feeding and vaccination. He looked after children in the Orphanage Home for several years. He also wrote the National Diarrhoel Diseases Program and started this training program and conducted various activities in the Sudan.

Internationally, Prof. Gaafar was one of the founders of the Arab Board of Pediatrics and Chair of the Examination Committee for 10 years. As well, he was a Researcher and Director in collaborative studies with the ADE Nutrition Society in Paris, Global Scientific Working Group in Switzerland, School of Tropical Medicine in Liverpool, Uppsala University, and EMRO of the WHO. Through his work at GICH, he actively participated in undergraduate and postgraduate teaching, supervision and examinations. He structured courses and trained paramedical staff who worked in paediatrics all over Sudan and supervised tens of thesis presented for MD degrees by paediatric registrars. Prof. Gaafar participated actively in a multitude of international and national paediatric conferences and was a guest speaker to many of them in UK, Sweden, USA, Canada, Switzerland, Saudi Arabia and Oman. He has been the President of the Sudan Association of Paediatricians (SAP, 1991-2001) and continued to be a member of the Editorial Board of the Sudanese Journal of Paediatrics (SJP). He published widely in national and international journals and contributed to eight textbooks in paediatrics and child health. Currently, he is professor and leader of a paediatric unit at Gaafar Ibnauf Children's Hospital and continues to be hailed with honors by Sudanese people [1].

INTRODUCTION

It must be noted that paediatric services were almost non-existent up to the late 1950s. Professor Mahmoud Mohamed Hassan [2] and Prof. Salah Abdelrahman Ali Taha [3] pioneered this field in Sudan and later in the Arabian Peninsula. Prof. Hafez Al Shazali [4] and Prof. Mohamed Ibrahim Ali Omer [5-7] pioneered the establishment of the first Department of Paediatrics and Child Health in Sudan within the Faculty of Medicine, University of Khartoum (U of K).

Paediatrics and child health units at the Ministry of Health and the U of K alike had been part of General Medicine Departments until the beginning of the 1970s [8]. Paediatricians were few against the background of unacceptably high morbidity and mortality among children, the poor scattered paediatric services in the Country and the dilemma facing mothers to care for their sick children. The task of developing pediatric services was indeed challenging and demanding, considering the small number of pediatricians and the size of the responsibility, coupled with the noticeable lack of basic statistical information.

Establishing paediatric emergency service in Sudan

Till 1977, childhood emergency problems in Khartoum were tackled by a single Paediatric Emergency Unit at Khartoum Civil Hospital (currently, Khartoum Teaching Hospital) which acted as a referral unit and provided 24 hours service [9]. In addition, patients requiring medical supervision and intervention i.e. injections, intravenous fluids etc. were admitted for 24 hours. The staff consisted of nurses on 8 hourly shifts, resident house officers, a resident registrar and a consultant on call. The service coverage was shared, on alternate days, by units belonging to the Ministry of Health and the Department of Paediatrics and Child Health, U of K. Cases were mainly referred from health centres, but direct access was available for urgent conditions. About a third of all admissions

(29%) were from outside Khartoum City, mainly Gezira Region, Khartoum North and Omdurman [9]. Respiratory diseases, gastroenteritis, malnutrition, childhood infections and malaria accounted for more than 80% of the admissions. After 24 hours, children who improve were discharged home (79%), those who required investigations and further management were admitted to Khartoum Civil Hospital (Currently, Khartoum Teaching Hospital) and Soba University Hospital [9]. The capacity was 30 cots, equipments were simple and a limited supply of drugs was available. Similar to other developing countries, cases needing care were beyond the limited capacity of the unit, and admissions (about 20 per day) had to be triaged according to a priority system (Figure 1).

Figure 1 - Photo of the crowded Paediatric Emergency Unit at Khartoum Civil Hospital (currently, Khartoum Teaching Hospital) taken by the Sudan Ministry of Information on 27 July, 1975. The International Editor of the Sudanese Journal of Paediatrics ((Prof. Mustafa A. Salih, then House Officer on duty) examining a young infant.

The Ministry of Health rightly believed that a children's hospital should be established in Sudan for the treatment of sick patients. Prof. Gaafar Ibnauf Suliman volunteered to take the task of establishing this first Children's Emergency Hospital in Sudan. The project was officially inaugurated in 1977. With regards to this, Prof. Mustafa Abdalla M. Salih, International Editor of SJP, told an interesting story, which happened when he was working as Registrar in Paediatrics. Early in the morning of one day, he was asked by Prof. Gaafar to accompany him to bring chairs to the Paediatric Emergency Unit building. While accompanying Prof. Gaafar in his car, followed by a lorry, he realized that they were supposed to bring chairs for the inauguration ceremony of the proposed Children's Emergency Hospital. High dignitaries were expected and there were no enough chairs in the place! Arriving at the famous Alzaibag Café at Souk el Arabi (Arabic Market), Prof. Gaafar paid for hiring some chairs (a common practice in those days). However, the administrator wanted a deposit as well. Prof. Gaafar told him, "Do you see this nearby building? This is owned by my father!" He was referring to Ibnauf Suliman Building, the famous two story building at Souk el Arabi (Arabic Market).

The Children's Emergency Hospital (CEH) evolved into 16 wards, different clinics, a pharmacy, laboratories, Radiology Unit, Infectious Diseases Unit, the Nutritional Rehabilitation and Vaccination Units, Administration, Records and Statists Units; and offices were built in a period of 6 months. The project was based on self-help and donations from Sudanese individuals without contribution from government recourses. Prof. Gaafar personally supervised all constructions. In this respect, Prof. Abdelaziz Elamin (Chairman of the Department of Paediatrics, College of Medicine and Medical Sciences, Arabian Gulf University, Kingdom of Bahrain, and Member of the International Editorial Board, SJP) also told an interesting story. He was then working as Registrar at C15 Ward (affiliated to the Children's Emergency Hospital). One early morning, Prof. Gaafar arrived at C15 Ward to find that the contracted workers who, were supposed to establish a garden nearby the building, abandoned their work and sat nearby waiting for their wages to be cleared first. All what Prof. Gaafar did was that he rolled up his shirt sleeves and started working in the proposed garden, digging the ground. The workers resumed their task in apology!

Procurement of necessary equipment was part of the contribution by UNICEF and others. The immediate result was reduction of child mortality by almost 30% within a short period. This was achieved by separation of different diseases in special wards, thus avoiding cross infections, and through continued intensive regular training of medical and paramedical staff.

The experience and results were highly commended by WHO and UNICEF who acted swiftly to transfer it to neighboring countries with excellent results despite variations in economy and social standards. Equally, the role of regular vaccination of children resulted in rapid decline in morbidity and mortality. The nutritional department had a major role in the management of severe cases of malnutrition and enabled mothers to prepare the right type of food supplements to their children. The Nutritional Referral Clinic at the CEH won a gold medal granted by UNICEF for preparing foods using local ingredients from different parts of the country.

The hospital was recognized by the public and thus received an average of 24,000 children per month in the Emergency Room, of whom up to 5,000 were admitted in rooms built and equipped nearest to doctors. The majority of acute conditions seen in the Hospital were patients suffering from acute dehydration, acute respiratory problems, malaria and acute infectious diseases. Others included systemic conditions like cardiac, respiratory, renal, gastrointestinal, hepatic and neurologic diseases. Those were subsequently treated at long stay wards

until the condition improved or patients got cured.

The CEH became one of the teaching / training centers for undergraduate and postgraduate students for the U of K but overtime for other newly developed universities. It also had the responsibility of training medical and paramedical staff from the Ministry of Health, hence training continued as an ongoing process. There were weekly clinical meetings, journal clubs and discussion of hot issues in paediatrics and child health. These meetings were attended by all doctors practicing in the hospital; however, registrars from other hospitals did attend these meetings. Specialized paediatric topics were conducted by consultant paediatricians and university tutors.

Bulding Gaafar Ibnauf Children's Hospital

Due to the rapidly increasing number of patients attending the hospital and complexicity of their conditions, plans were drawn to increase the number of beds and arrange for properly equipped specialized units in a six storey building. Her Royal Highness Princess Anne of the United Kingdom kindly paid a visit to the CEH in December 1985 and she was the first contributor of the project (Figure 2).

Figure 2 - Her Royal Highness Princess Anne of the United Kingdom paid a visit to the Children's Emergency Hospital in December 1985 accompanied by Prof Gaafar Ibnauf Suliman (right). HRH Princess Anne was the first contributor of the project which established Gaafar Ibnauf Children's Hospital.

She donated almost all iron bars and cement for the construction of the new hospital. This was followed by generous contribution from all parts of the world through their Ambassadors in the Sudan in terms of building materials, medical equipment and furniture. Save the Children Fund (UK), Lady Elspeth Howe, the wife of the Secretary of State for Foreign and Commonwealth Affairs (Foreign Minister) of the UK donated a large Generator, and Sister Emanuel from France donated the OTIS lifts; the President of the European Community provided food supplements, and medicines came from the German Republic.

The Hospital was built and established through the kind help from Sudanese citizens and organizations. Engineers in private practice (Eng. A/Moniem Mustafa and partners Dr Siddig A/Wahab and Dr Yahia M. Salih), and engineers from the University of Khartoum and other institutions carried the work as planned. A significant proportion of building materials were donated by Saudi individuals and companies, and the central cooling system by El Shaikha Fatima bint Mohammed el Gasimi. Sayed/ Salah Idris, a Sudanese businessman resident in Saudi Arabia donated for buying different materials. Hospital beds, Siemens X-ray machines and drugs came from Germany, and 65 intensive care incubators were donated from West and North Europe through their Embassies. The offices of United Nations kindly provided complete sets of health information system and prepared a plan for care of patients admitted to the Hospital.

Transportation of building materials and equipment from Jeddah to Port Sudan was arranged by Sayed/ Mohammed Ba Aboud and internally through all available transporting companies and by railways. The building was completed through donors from various institutions for free. To mention a few, Eng. Habib Ahmed El Tayeb and his brother who built 3 concrete stories, The Danfodio Construction Group built the basement, one floor was completed by Eng. Noreldin Yamani and 2 floors were built by direct labor; and the lifts were installed by Eng. Abdel Aziz Mustafa Ahmed. All the buildings were done by local contractors; the aluminum work was done for free. All the electrical wiring and installation was completed by Mr. Mamoon El Tayeb for free, and the drainage system was done by Eng. Khadam from the University of Khartoum. Throughout the construction phase, Prof. Gaafar Ibnauf was part of the scene (Figure 3), and according to a testimony by Dr Elamin Ibrahim Elamin [10], Prof. Gaafar used to carry some of the building material together with the contracted laborers, as a gesture of solidarity and encouragement!

Figure 3 – During the construction of Gaafar Ibnauf Children's Hospital. Prof. Gaafar accompanied by thee of his children. Left to right: Samah, Sara (currently, Consultant Endocrinologist) and Ibnauf (currently, Consultant Endoscopy Surgeon).

It is only through those who kindly offered their contribution that the dream of a children's hospital became a reality. The Hospital was officially opened by the Head of the State H.E. Omar al-Bashir in 2002, and based on his admiration he declared that what has been achieved for the needy children of the Sudan was indeed remarkable. He named the 498-bedded hospital as Dr. Gaafar Ibnauf Specialized Hospital, being the second paediatric hospital in Africa after another one in South Africa, and pioneering in Arab Countries. He offered Gaafar Ibnauf the Highest Medal in the Country (Medal of Achievement) and an equivalent of 2 months salary to all the staff working in the Hospital. The Hospital started with full capacity and has been run on free treatment basis based on his Excellency's declaration.

One of the great achievements of GICH and its predecessor the CEH is that management of outbreaks and epidemics of infectious diseases found a sentinel focus. This was reflected in high standard of care for patients, and pertinent epidemiologic decisions for their control. Outbreaks which were studied and resulted in seminal publications included diphtheria [11-14] and whooping cough [15]. The first case of paediatric AIDS in Sudan was diagnosed at the CEH in a hemophiliac boy, and highlighted the danger of the imported contaminated blood products [16]. Other studies included acute respiratory tract infections (ARI)[17]. The ARI patient population also became part of a doctoral thesis at Uppsala University by a Swede (Bjorn Herrmann) who spent a few months in Sudan [18]. Another study which also involved the patient population at the CEH was that of Prof. Abdelaziz Elamin on childhood diabetes. This study culminated in a doctoral thesis at Uppsala Universiy, Sweden [19].

Another major contribution is the management of the 1988 pandemic of meningococcal meningitis. A Doctor of Medical Science thesis by Prof. Mustafa A. Salih at Uppsala University [20], Sweden utilized the power of genetics to trace the clone of Neisseria meningitides (Group A clone III.1) causing the pandemic wave of meningococcal meningitis (1985-1990) which spread over vast territories in Asia (including Saudi Arabia) and Africa (including Sudan and Ethiopia with more than 70,000 cases). This study [21] constituted one of the pioneering works in molecular epidemiology and proved to be vital in controlling epidemic meningitis worldwide. Based on this and other bacteriologic data, An ELISA technique for the rapid diagnosis of bacterial meningitis was evaluated [22]. The molecular biology results also helped in the development later of a new conjugate vaccine which put an end to Group A meningococcal epidemics. The patient material and bacterial strains collected from CEH culminated in another two doctoral theses by Swedes at Uppsala University. One of these was conducted by Hans Fredlund [23], and the other by Anders Backman [24]. The latter study [24] pioneered a novel polymerase chain reaction (PCR) strategy for the simultaneous detection, in cerebrospinal fluid (CSF), of *N. meningitides, H. nfluenza, S. pneumonia, S. agalactiae,* and bacteria in general [25]. This became part of the practice guidelines for the management of bacterial meningitis [26].

REFERENCES

1. An Honor Reception for Professor Gaafar Ibnauf Sulima (in Arabic). Available at https://www.youtube.com/watch?v=UgYaFD5KhYc. Accessed on December 8, 2015.
2. Abdullah MA. Pioneers of Paediatrics in Sudan: Professor Mahmoud Mohamed Hassan. Sudan J Paediatr 2011; 11(1): 70-71.
3. Adam KA. Pioneers of paediatrics: Professor Salah Abdelrahman Ali Taha. Sudan J Paediatr 2013;13(1): 56-62.
4. Shazali H, Ahmed AM, Karib A. An experiment in community approach in delivery of health services in rural areas. Sudan J Paediatr 1977(2):10-18.
5. Habour AB. Editorial: The Right Model. Sudan J Paediatr 2010; 10: 3.
6. Salih MAM, Satti SA. Editorial. Commitment to the wellbeing of children worldwide. Sudan J Paediatr 2011;11(2): 4-5.
7. Salih MAM. Welcome Speech of the International Child Neurology Association (ICNA) Educational Meeting in Khartoum, Sudan (January 27-31, 2015). Sudan J Paediatr 2015; 15(1):79 - 87.
8. Salih MAM, Satti SA, Swar MO. Building civilization starts from childhood. Sudan J Paediatr 2013; 13(1):6- 10.
9. Omer MIA, Karrar ZA. The pattern of paediatric emergency admissions in one unit in Khartoum. Sudan J Paediatr 1977(2):19-30.
10. An Honor Reception for Professor Gaafar Ibnauf Sulima by Emirates Diabetes Society (in Arabic). Available at: https://youtu.be/VVSd2NI3Qvk. Accessed on December 24, 2015.
11. Salih MAM, Suliman GI, Hassan HS. Complications of diphtheria seen during the 1978 outbreak in Khartoum. Ann Trop Paediatr 1981; 1 : 97-101.
12. Salih MAM, Suliman GI, Hassan HS. Unusual sites of diphtheritic membrane and cervical oedema. Sudan J Paediatr 1984 ; 3 : 52-62.
13. Salih MAM, El Hakeem HS, Suliman GI, Khatim AS. An epidemiological study of the 1978 outbreak of diphtheria in Khartoum province. J Trop Pediatr 1985; 31 : 8-12.
14. Salih MAM. A clinical profile of diphtheria in Sudanese children. Sudan J Paediatr 1986; 5: 31-36.
15. Abdalla BA, Salih MAM, Yousif EA, Omer MIA. Whooping cough in Sudanese children. East Afr Med J 1998; 75:51- 56.
16. Hashim MSK, Salih MAM, El Hag AA, Karrar ZA, Osman EM, El-Shiekh FS, et al. AIDS and HIV infection in Sudanese children: A clinical and epidemiological study. AIDS Patient Care STDs 1997;11:331-337.
17. Salih MA, Herrmann B, Grandien M, El Hag MM, Yousif BE, Abdelbagi M, et al. Viral pathogens and clinical manifestations associated with acute lower respiratory tract infections in children of the Sudan. Clin Diagn Virol 1994; 2:201-209.
18. Herrmann B. Chlamydial Infections in the Genital and Respiratory Tracts. Epidemiological and Diagnostic Studies. Doctoral thesis, Uppsala University 1995.
19. Elamin A. Childhood type 1 (insulin-dependent) diabetes mellitus in the Sudan: epidemiological and clinical studies. Doctoral thesis, Uppsala University 1992.
20. Salih MAM. Childhood acute bacterial meningitis in the Sudan: An epidemiological, clinical and laboratory study. Scand J Infect Dis 1990; 66 (Suppl):1-103. Doctoral thesis at Uppsala University.

21. Salih MAM, Danielsson D, Backman A, Caugant DA, Achtman M, Olcen P. Characterization of epidemic and non-epidemic Neisseria meningitidis serogroup A strains from Sudan and Sweden. J Clin Microbiol 1990; 28: 1711-19.
22. Salih MAM, Ahmed HS, Hofvander Y, Danielsson D, Olcen P. Rapid diagnosis of bacterial meningitis by an enzyme immunoassay of cerebrospinal fluid. Epidemiol Infect 1989; 103: 301- 310.
23. Fredlund H. Serum factors and polymorphonuclear leukocytes in human host defence against Neisseria meningitidis. Studies of interactions with special reference to a chemiluminometric technique. Scand J Infect Dis 1993; 87 (Suppl):1-72. Doctoral thesis, Uppsalla University.
24. Backman A. Neisseria meningitidis and diagnosis of bacterial meningitis: genotypic and phenotypic characterization, antibiotic cusceptibility and PCR detection. Doctoral thesis, Linkoping University 1999.
25. Olcén P, Lantz PG, Bäckman A, Rådström P. Rapid diagnosis of bacterial meningitis by a seminested PCR strategy. Scand J Infect Dis 1995;27(5):537-9.
26. Tunkel AR, Hartman BJ, Kaplan SL, Kaufman BA, Roos KL, Scheld WM, Whitley RJ. Practice guidelines for the management of bacterial meningitis. Clin Infect Dis 2004 Nov 1;39(9):1267-84.