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Cardiology services in Ethiopia

The 100 million population African country is only now emerging to tackle the problem of cardiovascular disease

Ethiopia is a sub-Saharan country, three times larger than Germany, with a rapidly growing population from 20 million inhabitants in 1960 to about 100 million today. The country suffers from a severe shortage of physicians and experienced medical educators. This has been greatly aggravated by a 17-year fierce civil war and a constant severe brain-drain to western countries.

After the end of the civil war in 1991, the new Ethiopian Government focused its efforts to implement a functioning health system to prevent and control infectious diseases in under 5 years old, early childhood morbidity and mortality, and HIV/AIDS. This was supported by foreign institutions.

In contrast, the awareness of non-communicable diseases such as congenital heart disease, rheumatic heart disease, cardiomyopathies, and arteriosclerotic diseases has not been well developed. For example, in Ethiopia, rheumatic heart disease has always been highly prevalent in children and young adults as a major cause of premature death, loss of productive life, individual disability and a burden for family and the health system, a disease that has been successfully eradicated in western and some developing countries e.g. Cuba.

The first cardiac services made available to Ethiopians was in 1995 and were provided on a very small scale by western charity institutions, e.g. by financing heart surgery abroad for children with critical heart diseases. In addition, some foreign cardiac surgical and interventional cardiology teams have been coming to Addis Ababa University to treat primarily children free of charge during short time periods in the year. They bring with them their complete medical materials and staff, using an existing operating theatre and the local intensive care unit.

In 2007, one private institution in Addis Ababa started a small-scale non-invasive and invasive cardiology program including pacemaker implantation and percutaneous coronary interventions performed by Ethiopian physicians trained in Sweden. Special procedures, such as Mitral Valve Balloon Valvuloplasty, were performed in Ethiopia with the support of cardiologists from abroad.

According to the Ethiopian Ministry of Health figures in 2017, the number of medical schools in the whole country increased in 12 years from only 3 to more than 28 public and 8 private referral and teaching colleges with a capacity to graduate more than 2000 doctors a year. The number of active physicians in the whole country is currently only about 6500, which is one physician for 15 000 inhabitants. The vast majority are General Practitioners of which a considerable number are active in the private sector because of substantial higher incomes compared to university, city hospitals, and others of government institutions.

In 2010, the national Ministry of Health began to promote the prevention, diagnosis and treatment of previously neglected non-communicable diseases. In 2014, the 'National Strategic Action Plan (NSAP) for Prevention & Control of Non-Communicable Diseases in Ethiopia 2014 to 2016' was published. Now, embedded in a comprehensive health program, the establishment of modern equipped cardiology units in the most advanced University Hospitals in the capital, and other major towns was initiated. A good example is the Ayder Referral Hospital of Mekelle University College of Health Sciences. Mekelle is the capital of the northern Ethiopian Province Tigray. Within the Department of Internal Medicine, a totally new and modern cardiology unit was installed and equipped with modern electrocardiography (ECG), stress ECG, Holter-ECG and –blood pressure (BP), and echocardiography systems in 2011. The unit was staffed by three dedicated internists with the intention to be sent abroad for cardiology education.

In June 2013, Mekelle University signed a purchase agreement for the first-ever new, modern and fully equipped heart catheterization laboratory (cath lab) in a government institution in Ethiopia. After a painstaking installation period of 2 years, the first heart catheterization was performed in December 2015.

Two identical units of this modern catheterization laboratory have been installed in Addis Ababa in 2016 and 2017. Several Ethiopian internists from Addis Ababa and Mekelle University have been trained abroad in non-invasive and invasive cardiology during the last 3 years. They mostly stayed abroad for 1 year e.g. going to Sweden, Italy, Germany, India, and China. To gain the necessary skills to administer a

full size invasive cardiology program, they need to increase their experience by stepping up the number and difficulty of cases in their own cath labs, supplemented by continued education, and counselling from experienced cardiologists.

After overcoming the remaining severe organizational and financial obstacles, the final aim is to initiate and set-up an Ethiopian Cardiology Fellowship program.

In June 2017, the first open heart surgery was performed in Addis Ababa by young Ethiopian surgeons trained in India, using the same facilities as the foreign surgical teams. Efforts to install cardiac surgery units in other parts of the country including Ayder Hospital of Mekelle University are on the way.

The community of Ethiopian physicians practicing in the cardiovascular field is very active despite their small number. In 2014, they founded the Society of Cardiology Professionals Ethiopia, organizing annual scientific meetings with topics on specific cardiovascular problems in the country.

Participation in the International REMEDY Rheumatic Heart Disease Study (1) and the Addis Ababa communiqué (2) by some of its members has been made possible through governmental and foreign financial support, enabling programs for the systematic primary and secondary prevention of rheumatic heart disease by the Medical Schools of the Addis Ababa University and Jimma University.

To date, there are no other specialized cardiology services available in the whole country. The number of certified cardiologists with education in ECG and ECHO in Ethiopia is nearly single-digit. Even ECG machines are rare or not functional even in university hospitals.

There is a severe shortage of medical technicians for maintenance and repair of the new costly medical systems. The very scarce availability of even simple spare parts in the Ethiopian market and the demanding, unforeseeable long lasting and costly import procedures hamper the execution of necessary maintenance and repair-work or make them even impossible.

The lack of covering the costs for cardiology services by health insurances or social programs in private and federal medical institutions such as universities results in a very low number of patients that can afford ECG, echocardiography, or other specialized services. Therefore, even the few existing cardiac catheterization laboratories in the country have only low annual examination numbers, despite the huge number of needing patients.

In summary, the cardiology services in Ethiopia are still at a very early stage. Among other things, this is the result of the long-standing neglect of non-communicable diseases by the Ethiopian health policy, which had to first set-up very basic medical treatment after the civil war.

Although equipping clinics with modern technology is demanding for the poor country, the more serious problem is the lack of physicians and specialist medical educators. Cardiologists of developed countries can alleviate this by continuous and consistent assistance, sharing their experience by teaching and counselling on-site; in this case in Ethiopia.

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Chest compression for syncope in medieval Persia

The earliest recorded external cardiac compression performed for syncope in Ancient Iran: an historical perspective from the viewpoint of Nafis al-Kermani

There have been attempts to revive victims of sudden death throughout human history[1,2]; however, resuscitation was not routine until the 19th century.[2] In 1960, cardiopulmonary resuscitation (CPR) was officially presented and a sequence of interventions was defined under the abbreviation ABCD: Airway, Breathing, Chest compression, and Defibrillation.[1,2] Although CPR is a young science which has been the foundation of cardiac arrest care for more than 50 years,[2] it appears to have a longer history based on historical evidence.

'*Nafis ibn-e Iwad al-Kermani*', nicknamed '*Burhan-ud-Din*' was a famous Iranian physician and the author of medical books in the mid-15th century, born in Kerman, a city of Persia, Iran.[3] Medicine as a profession was being passed down from generation to generation in his family.[3,4] He mentioned in the introduction of his book that '*I was in a family that all were physicians and I had practice in medicine from a young age*'.[4] After he came to prominence in medicine, he went from Kerman to Samarqand at the invitation of Prince of the Mughal Empire (Gurkani)—Ulugh Beg (1394–1449)—and became the court physician. After the death of the Prince, Nafis returned to Kerman and lived there until his death.[3]

During his time in Samarqand, in the reign of the Prince, Nafis wrote a commentary in the book '*Al-Asbab wa al-Alamat*',[5] ('*Al-Asbab*' means