



The State of Heart Disease in Sudan

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Outline

- Introduction
- Burden of cardiovascular disease (CVD) in Sudan
- Pattern of CVD
- Epidemiology of specific CVDs
- Conclusion

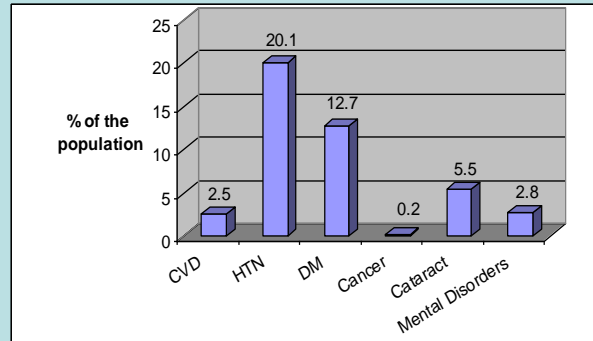
Introduction

- Worldwide, cardiovascular disease is responsible for 30% of all deaths and 10% of DALYs (Disability Adjusted Life Years)
- Commonest cause of death in low/middle/high income countries except for Sub-Saharan Africa; Infectious diseases esp. HIV/AIDS and malaria still predominate.

Source: **World Health Organization**. *The global burden of disease: 2004 update*

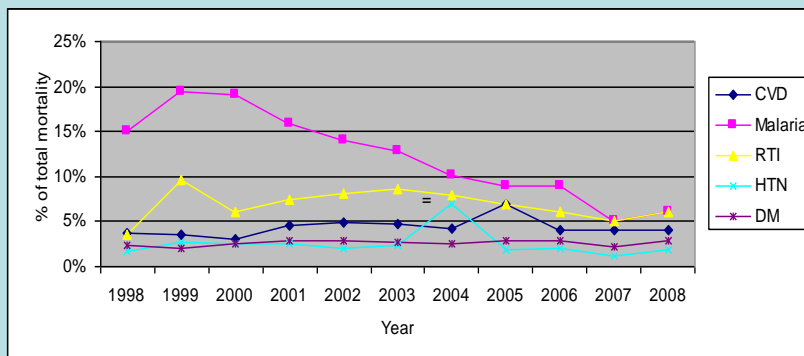


Sudan Household Survey



- **Sudan Household Survey (2006)**
 - Questionnaire based survey
 - 24527 households surveyed (> 55,000)
 - CVD = 2.5%. Note high rates of HTN & DM

CVD and In-hospital mortality



- CVD is one of the 10 commonest causes of in-hospital mortality over the last decade.
- Adapted from Annual Health Statistical reports of FMOH

Pattern of cardiac disease

- In 1937 an analysis of 100 consecutive cases admitted to Khartoum Teaching Hospital: 80 had cardiovascular syphilis, followed by RHD. No mention of IHD.
- In 1961 Dr Abdel Halim reported the following data. Available at <http://heart.bmj.com/cgi/reprint/23/4/383>

ANALYSIS OF 958 CARDIAC CASES INVESTIGATED IN KHARTOUM DURING THE YEARS 1957-1960

Cardiac disorders	Congenital	Syphilitic aortitis	Hypertension	Ischaemic heart disease	Pulmonary heart disease	Endomyocardial fibrosis	Rheumatic heart disease	Miscellaneous
Percentage of total	3.7	6.0	44.4	12.6	2.0	3.2	25.4	2.7



- 'Dr Abdel Halim Mohammed Abdel Halim, physician, was born on April 10, 1910. He died on April 16, 2009, aged 99' . *The Times May 4, 2009*

Pattern of Cardiac disease

- Three hospital based studies into pattern of hospital admissions

Hospital	Rheumatic heart diseases	Hypertensive heart disease	Ischaemic heart disease	Cardiomyopathy	Congenital heart disease
Khartoum North Siddiq Khalil et al (1984)	26.5%	33.7%	17.8%	4.8%	3.9%
AlShab Nawal Kordofani (1992)	30%	12%	32%	6%	2%
AlShab Suliman (2009)	7%	28%	66%	11%	

Rheumatic Heart Disease

- **WHO Global Rheumatic Fever/Rheumatic Heart Disease Prevention Program in Sudan**
- **Phase I from 1986-1989.**
 - 13,322 subjects screened (5-15 yrs)
 - Prevalence **3/1000**
 - *J Epidemiol Community Health.* 1992 October; 46(5): 477–479.
- **Phase II 1994-2003.**
 - 1,095,000 screened
 - prevalence ↓ from 3/1000 to **0.3/1000**

Presented by Dr N. Kordofani .2006 World Congress of Cardiology, Barcelona , Spain
- **Prevalence in Sub-saharan Africa 5.7/1000 and in N Africa 1.8/1000**



New data on RHD in Sudan

- Echo screening 0.3/1000 in Khartoum state vs 22/1000 in Darfur. (Prof Sulafa Khalid)

Ischemic Heart Disease

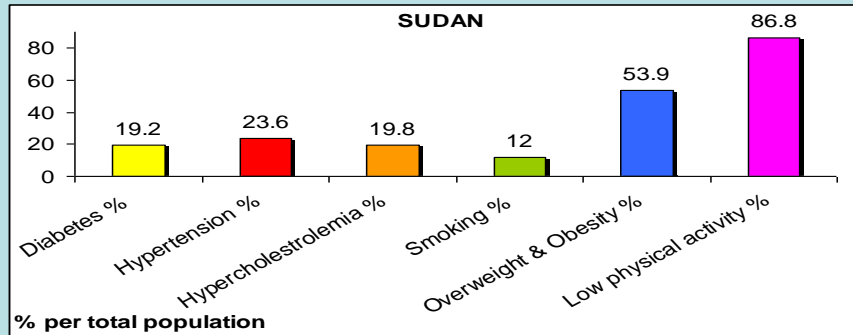
- **No epidemiological surveys on prevalence of IHD**
- **Coronary event rates was studied by Khalil S. et al in Khartoum State in 1989 using the diagnostic and classification criteria of the WHO Monitoring of Trends and Determinants in Cardiovascular Disease (MONICA) Project.**
- **Event rate 112/100,000 with mortality rate of 36/100,000. Similar to Beijing China 76/ 100 000 and much lower than Australia (Newcastle) 561/100 000, Canada (Stanford) 605/100 000.**

J Clin Epidemiology. 1996;49:1013-1016

Where do we stand today with IHD?

- **No recent surveys.**
- **We have entered a period of epidemiological transition.**
- **The WHO 2002 estimates for IHD in Sudan ,based on the Global Burden of Disease (GBD) study are an age-adjusted mortality rate of 205/100,000 and an age-adjusted DALYs of 1185/100,000.**
- **Such estimates need to be validated by local surveys.**

Prevalence of Risk Factors for IHD



- **STEPS**(STEPwise approach to surveillance) survey of chronic disease factors in Sudan /Khartoum from Dec 2005 to Jan 2006.
- **SHHS** showed a prevalence of 20.4 and 12.7% of HTN and DM respectively.
- **These five risk factors are responsible for 78.4% of the PAR worldwide and 89.2% in the African participants.** Source: Salim Yusuf et al. The INTERHEART study. *Lancet*. 364:937-52

Dilated Cardiomyopathy

- General feeling amongst cardiologist that DCM is diagnosed more frequently
- 40% of heart failure cases in Heart of Soweto study
- 20 % in THESUS-HF data. In some African countries, DCM is the most frequent cardiac diagnosis.
- 4-6% in previous hospital surveys in Sudan
- 11% of our current hospital admissions at Al Shab .

Peri-partum Cardiomyopathy

- All patients referred from Obstetrics department for evaluation for heart failure from 1975-1979 in Khartoum Teaching Hospital. Prof. Kinesh and his team
- 13 females were diagnosed from a total of 8605 deliveries (0.15%).
- Similar to other Sub-Saharan countries of 0.1%.
- Western world 0.01%

Congenital Heart Diseases

- **Prevalence of congenital heart disease in children 5-15 years of age was studied as part of Phase 1 of the WHO Global Rheumatic Fever/Rheumatic Heart Disease Prevention Program in Sudan**
- **13 322 in Sahafa town from 1986-1990**
- **Prevalence was 2 /1000**
- **VSD, ASD, PDA and TOF 85%**
- **Source: Siddiq I Khalil et al. Prevalence of congenital heart disease among schoolchildren of Sahafa Town, Sudan. *Eastern Mediterranean Health Journal* 1997; 3: 24-28.**

Conclusion

- **Heart disease are prevalent in Sudan**
- **They represent major cause of morbidity and mortality mortality**
- **The tetrad of Hypertensive heart disease, Ischemic heart disease , Rheumatic heart disease and Dilated cardiomyopathy constitute the bulk of heart disease in Sudan.**
(Suliman A. The state of heart disease in Sudan. Cardiovasc J Afr 2011; 22: 191–196)
- **Risk factors for IHD are alarmingly prevalent in the community**
- **Peripartum CM and congenital heart disease seem to be similar to other African countries**
- **More population-based nationwide surveys are needed.**