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Hypertension and socio-economic disparities among women in Sudan

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Outline

- Background
- Objectives
- Methodology
- Results
- Conclusion and recommendation

Background

Non-communicable diseases (NCD)

- Dominant causes of morbidity and mortality worldwide.
- Around 63% of deaths are attributed to NCD
- 80% in low and middle income countries (LMIC)

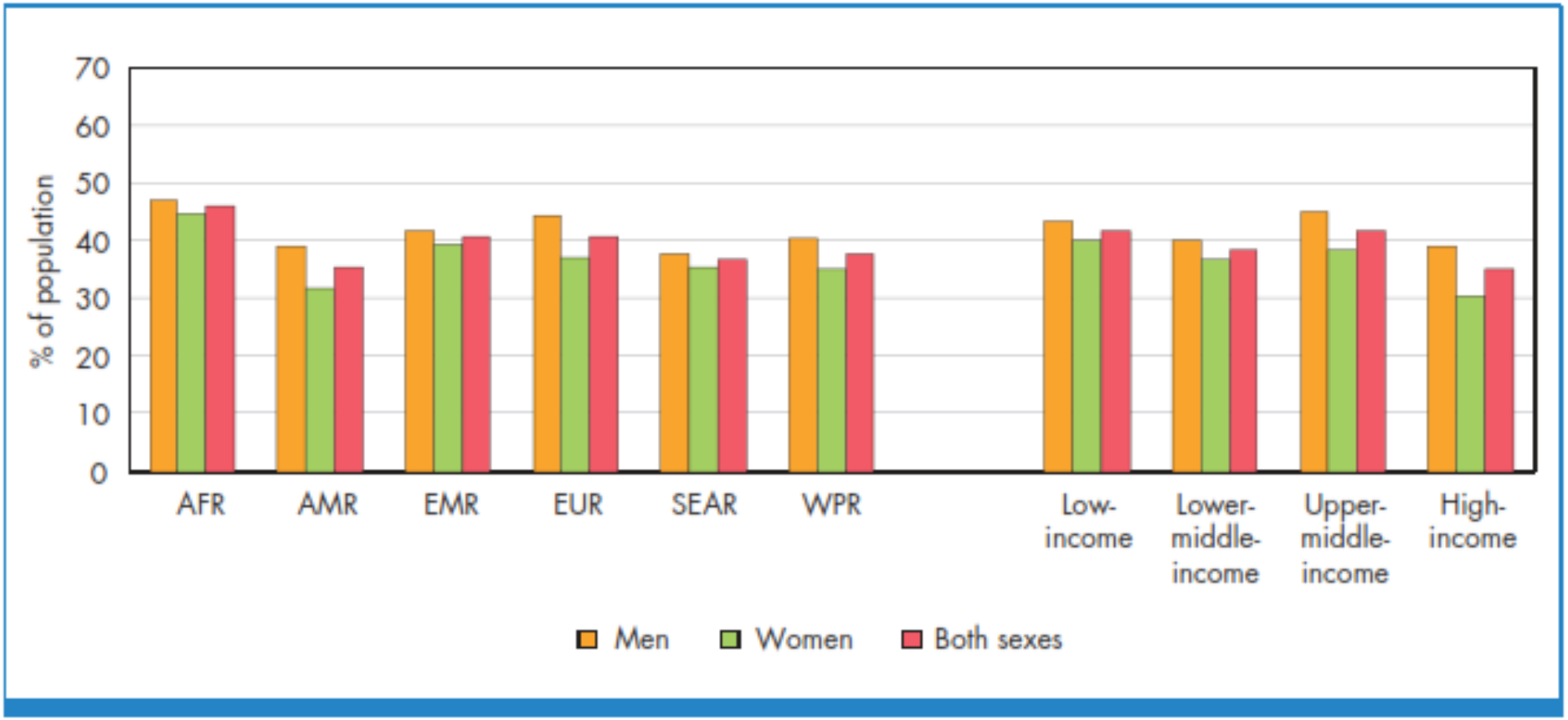
(WHO,2010)

Hypertension

- 12.8% deaths worldwide
- 3.7% of DALYs
- Prevalence in Africa 46% of adults
- Prevalence in EMR 41%

(WHO, 2008)

Prevalence of Hypertension by WHO regions and world bank income groups 2008



(WHO, 2008)

Research

- Research is mainly from high income countries

- Research is needed from LMIC
  - Transition occurring at a faster rate
  - Political complexity
  - Economic issues
  - Infection and NCD
  - Environmental and geographical factors
  - What works

(Miranda et al,2008) (Ebrahim et al.2013)


LIBYA
EGYPT
Halā'ib Triangle
Halā'ib
SAU. AR.
Wādī Ḥalfā'
Port Sudan
Red Sea
Nile
Atbara
CHAD
Omdurman
KHARTOUM
Kassala
ERIT.
Wad Medani
El Fasher
El Obeid
Gedaref
Kūstī
Jabal Marrah
DARFUR
Nyala
Blue Nile
White Nile
ETHIOPIA
Abyei Area
C.A.R.
SOUTH SUDAN
Ilemi Triangle
DEM. REP. OF THE CONGO
UGANDA
KENYA
0 300 km
0 300 mi
24
30
36
18
12
6

Sudan

- Third largest country in Africa and the sixteenth in the World
- Connects Arab world with Africa/ Saharan and Sub-Saharan Africa

Sudan Overview UNDP

People

- 37 million
- Ethnic groups: Sudanese Arab, Fur, Beja ,Falata
- Young population
  - 40% below age 15
  - 3.3% are 65 and above

History and conflict

- Independence 1956
- North and South 1955-1972/ 1983-2005
  - Secession of the South 2011
  - Post conflict turbulence in Kordofan and Blue Nile area
- Darfur 2003, ongoing
  - Thousands killed, millions displaced

Economy

- World bank LMIC
- Agriculture main GDP
- More than 45% of Sudanese live below the poverty line
- Huge external debt that consumes more than 60% of Sudan's GDP
- Undergoing recession, market inflation up to 45%

(World Bank, 2012)

Hypertension in Sudan

- In Sudan commonest among other NCD (25% of the burden of NCD)- One of the top ten diseases being treated in health facilities (1.3 % of outpatient visits)
- One of the 10 leading causes of death
- WHO Stepwise Survey in Khartoum 2005, prevalence of 23.6%, only 11.3% aware.

(Annual health statistical report 2008)
(WHO stepwise survey 2005)

Objectives

- To assess the burden of hypertension among adults in Sudan
- To examine disparities by wealth indices and geographical locations associated with hypertension for the population under study.

Methodology

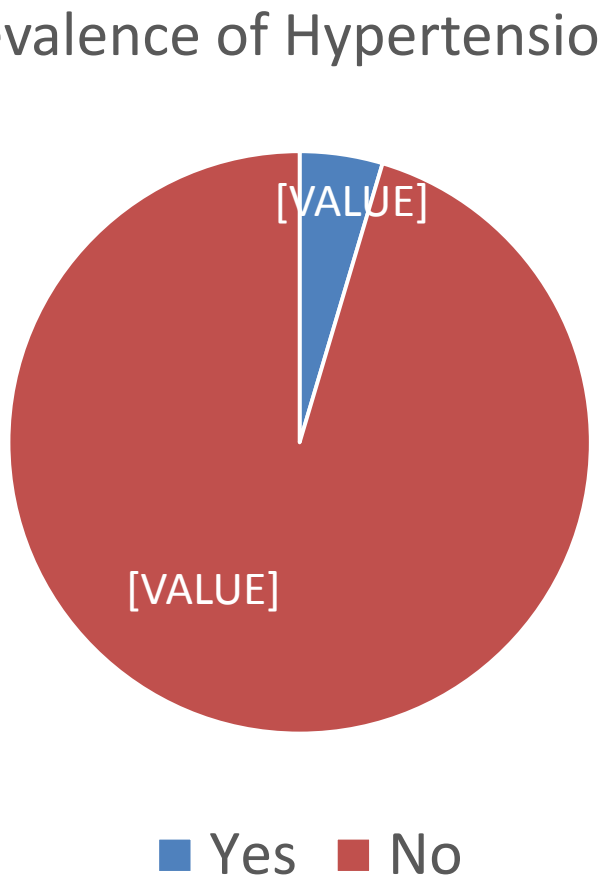
- Secondary data analysis: SHHS 2010
- Nationally representative carried out by the FMoH and the Central Bureau of Statistics
- 15,000 households, 14,921 occupied
- Primary Mandate of the SHHS: Women and Child health and monitor progress toward MDGs

- This study excluded men from analysis
  - Low response for men 33% vis-à-vis response of women (over 92%)
  - The SHHS lacked information regarding pertinent co-variates (smoking)

- Variables and measures
  - Outcome: hypertension (self reported)
  - Primary independent variable: SES (Literacy/Education (khlawa); employment and wealth index*)
  - Secondary independent variable: Geographical location/ Area

*The wealth index is a method to divide households into 5 quintiles in terms of "wealth" – from poorest to richest. "Wealth" is constructed by using information on household characteristics (crowding), amenities (water and sanitation), household assets (durable goods) owned by households. (Unicef)

Results



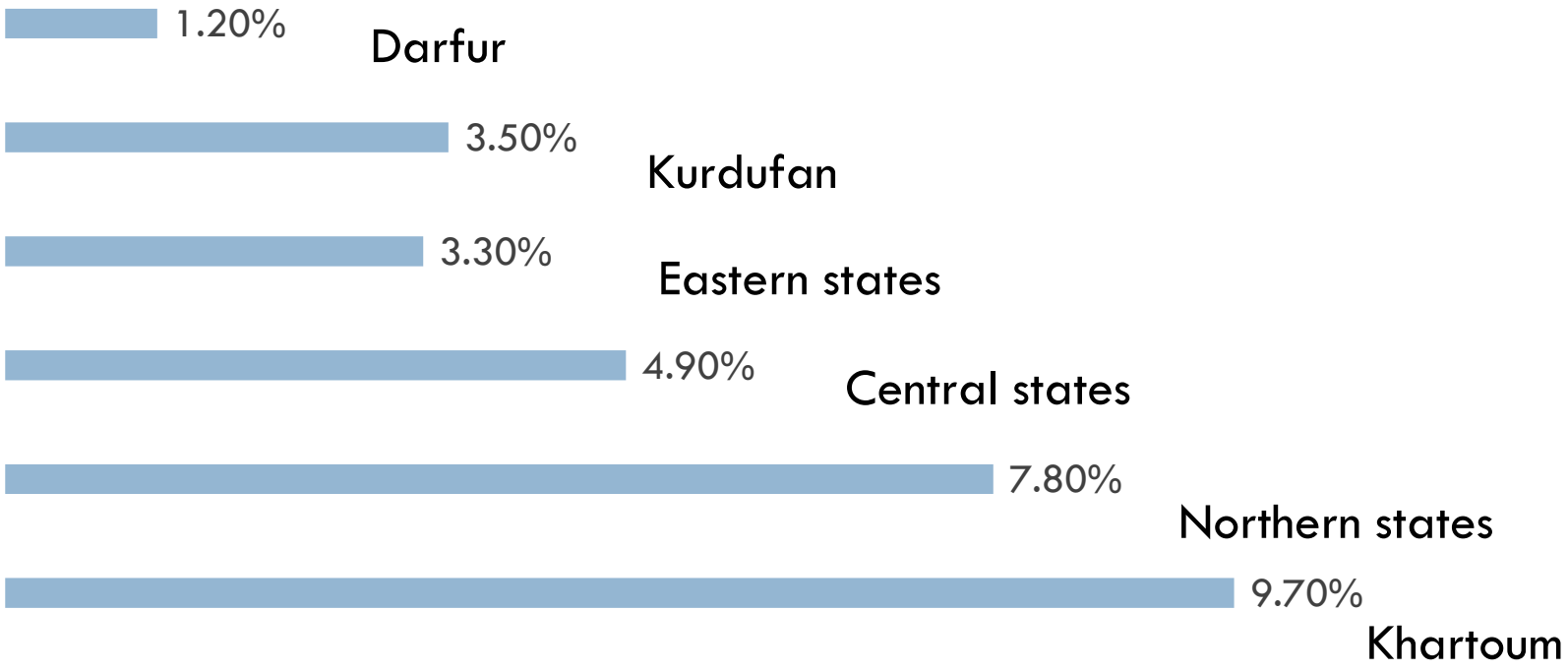
Results

Variables	Baseline population		Prevalence of Hypertension	
	N	%	n	%
Total sample	16340		756	4.6
Age				
25-34	5818	35.6	33	0.6
35-44	4144	25.4	99	2.4
45-54	3340	20.4	237	7.1
55-64	1622	9.9	193	11.9
≥65	1388	8.5	194	14.0

Variables	Baseline population		Prevalence of Hypertension	
	N	%	n	%
Level of education				
No school	9156	**56.0**	445	4.9
Primary/adult learning/khalwa	4636	28.4	222	4.8
Secondary +	2545	15.6	89	3.5
Employment				
Not employed	13242	**81.0**	617	4.7
Employed	3026	18.5	133	4.4

Variables	Baseline population		Prevalence of Hypertension	
	N	%	n	%
Area				
Rural	10805	**66.1**	380	3.5
Urban	5535	33.9	376	**6.8**

Prevalence of Hypertension by Region



Variables	Baseline population		Prevalence of Hypertension	
	N	%	n	%
Wealth index quintiles				
First	2694	16.5	23	0.9
Second	3522	21.6	66	1.9
Third	3498	21.4	132	3.8
Fourth	3319	20.3	228	6.9
Fifth	3307	20.2	307	**9.3**

Multivariate analysis, controlling for potential co-varaites

Variable (ref.)	Adjusted OR	95% CI	P-value
Area(Rural)			
Urban	1.20	0.98-1.4	0.081
States(Khartoum)			
Northern States	0.80	0.6-1.0	0.105
Central States	0.75	0.6-0.97	**0.031**
Eastern States	0.60	0.4-0.8	**0.000**
Kordofan region	0.84	0.6-1.2	0.312
Darfur region	0.30	0.2-0.5	**0.000**

Variable (ref.)	Adjusted OR	95% CI	P-value
Level of education (No school)			
Primary/adult education/khalwa	1.30	1.1-1.6	**0.007**
≥ Secondary	1.31	0.9-1.7	0.117
Wealth index quintiles (First)			
Second	1.82	1.1-2.9	**0.018**
Third	3.20	2.0-5.2	**0.000**
Fourth	5.53	3.4-8.8	**0.000**
Fifth	6.96	4.3-11.3	**0.000**

Limitations and Strengths

- Limitations
  - Missing information on confounders
  - Underestimate of hypertension prevalence
  - Likelihood of differential information bias
- Strengths
  - National representative survey
  - Can serve as a guide for policy makers

SHHS 2014

- What about the NCD module?
- Double burden?

Recommendations

- Introducing surveillance, monitoring and evaluation programs to the NCD department in the Federal Ministry of Health; along with the other WHO recommended units.
- Strengthening the Health Information System to serve as a reliable and efficient database on NCD
- Integrating NCD in the primary health care level to monitor a larger number of the population, on risk factors and burden of disease.
- The role of WHO-EMRO

Thank you