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Chronic disease prevention in S.S.A.

A case-study of community-based intervention in Ashanti

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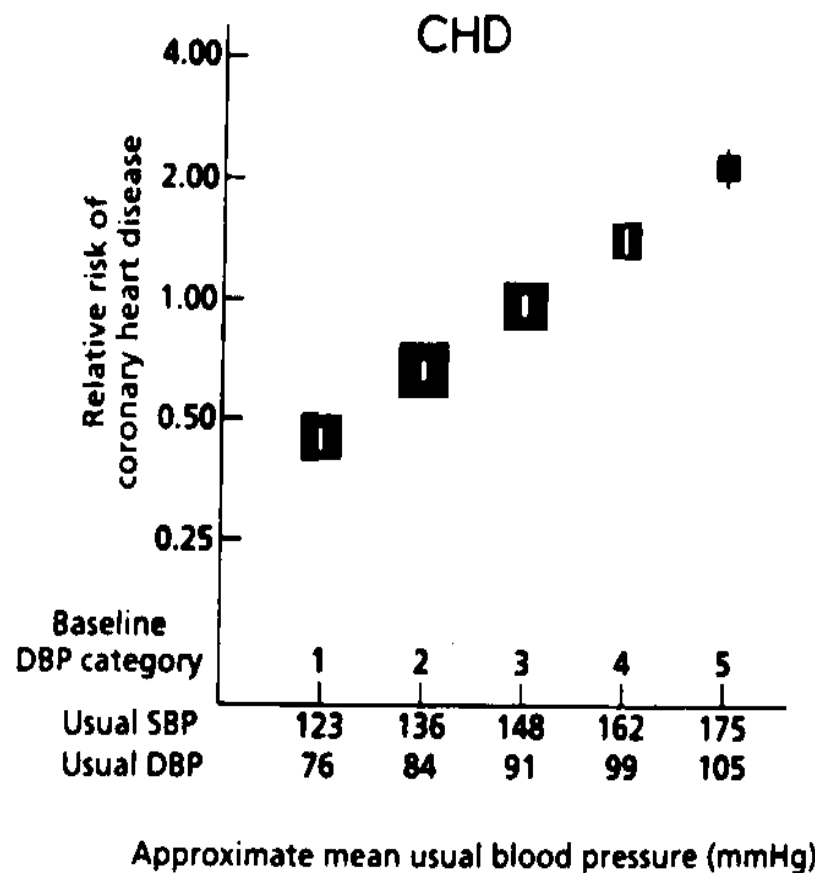
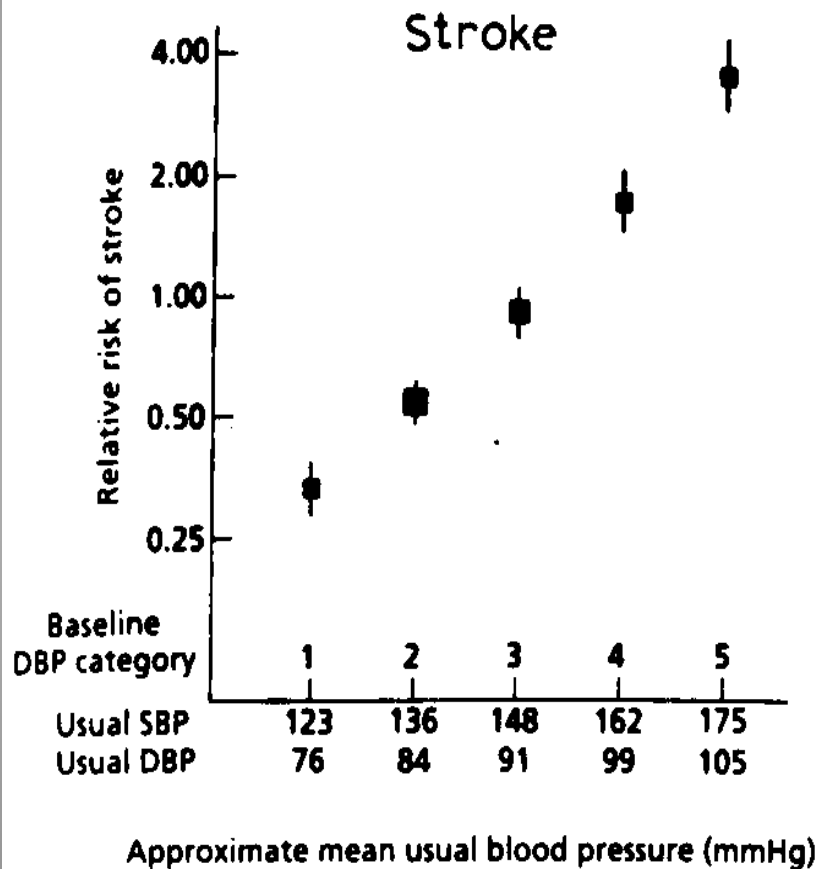
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Warwick Medical School
Coventry, UK



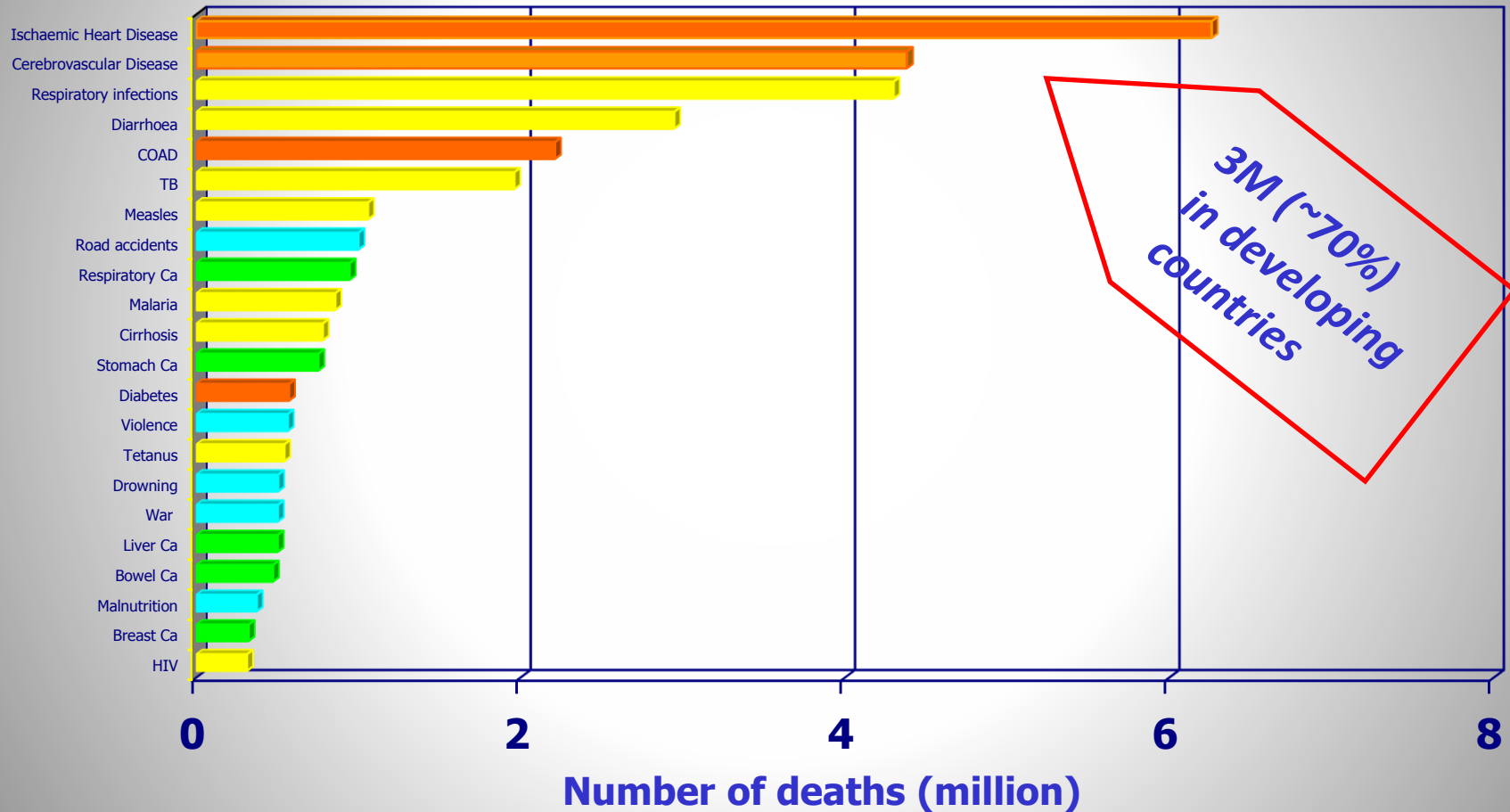
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Blood Pressure, Stroke and CHD

Relative risk of stroke and of CHD



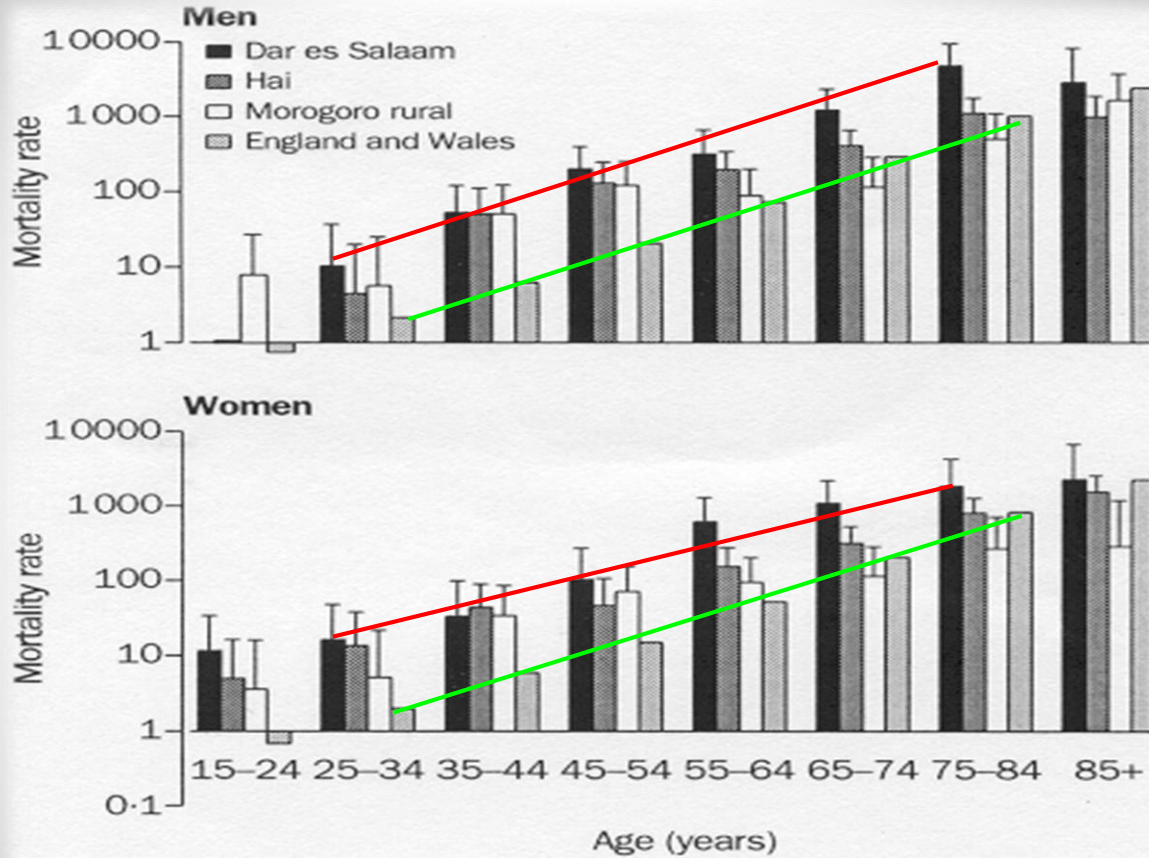
Selected leading causes of death worldwide in 1990





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Stroke mortality in urban and rural Tanzania



Number and yearly rate per 100 000 with 95% CI of deaths from stroke in 10-year age-bands in adult men and women in Dar-es-Salaam, Hai district, Morogoro rural district, and England and Wales (1993)

Logarithmic scale.

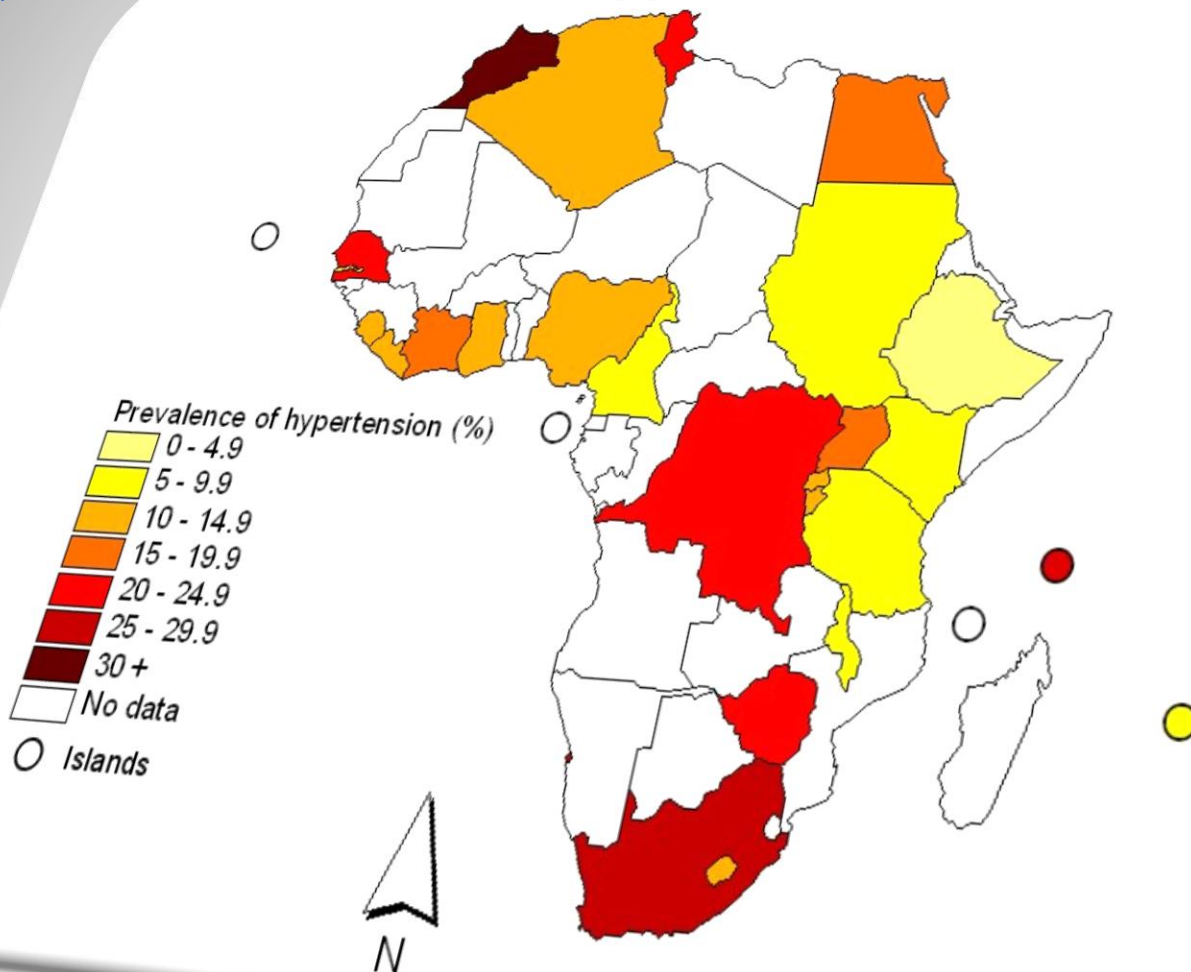
“More than a quarter of the world’s adult population – totalling nearly one billion (640 million in developing countries) – had hypertension in 2,000, and ... this proportion will increase to 29% - 1.56 billion – by 2,025.”

Kearney PM et al. Lancet 2005;365:217-23



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Prevalence of hypertension in Africa



Hypertension in sub-Saharan Africa



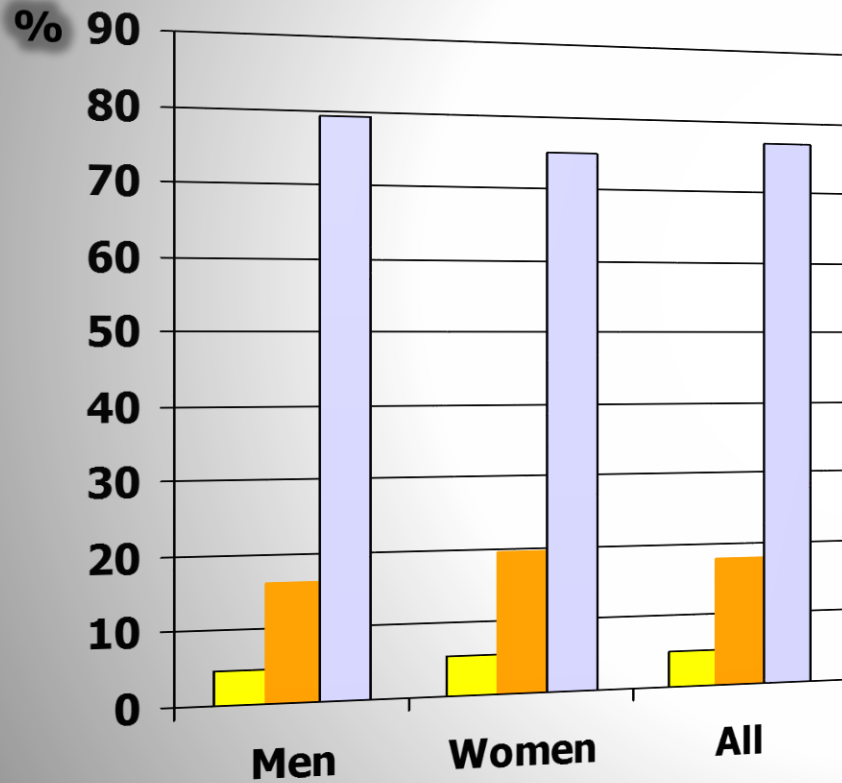
- 1. Hypertension is common in sub-Saharan Africa**
- 2. Its incidence is rising with increasing urbanisation**
- 3. There are few secondary care facilities for the detection and management of hypertension and its complications**
- 4. The contribution of hypertension to overall mortality in Africa is still unknown, but believed to be high**

Vascular deaths amongst acute medical admissions in Kumasi, Ghana



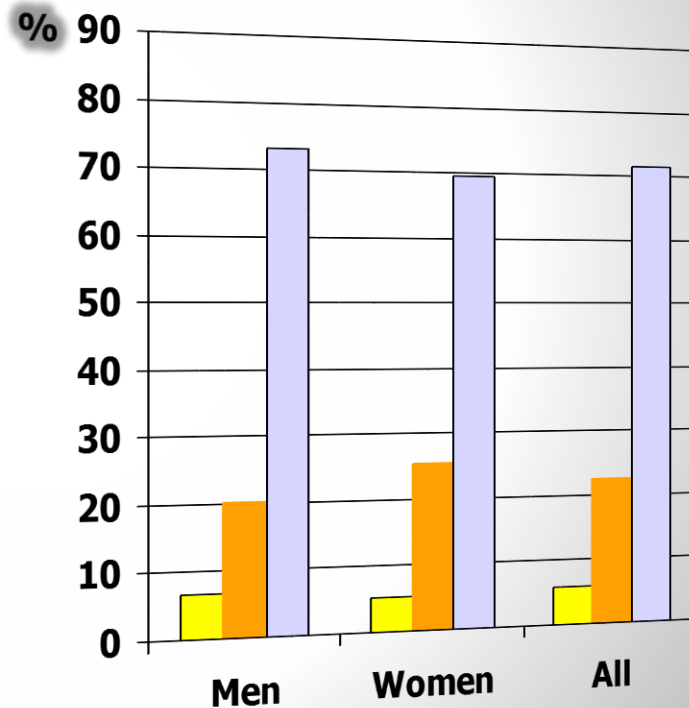
Admissions (n=3,317)

■ Renal ■ Cardiovascular □ Other



Deaths (n=758)

■ Renal ■ Cardiovascular □ Other



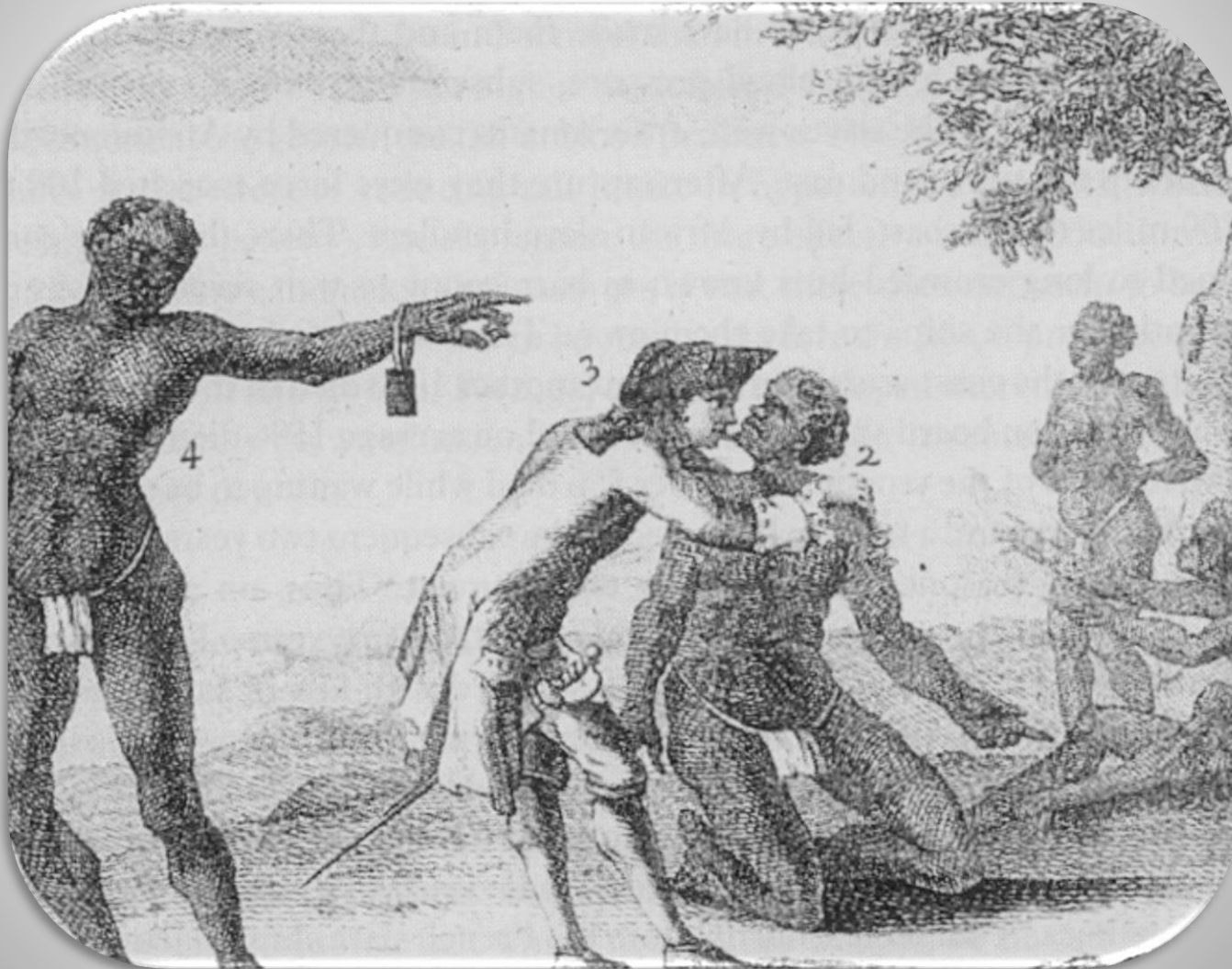
■ = hypertension, heart failure or stroke



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A slave trader licking a slave's face to assess his fitness for the voyage across the Atlantic

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The Kumasi Programme

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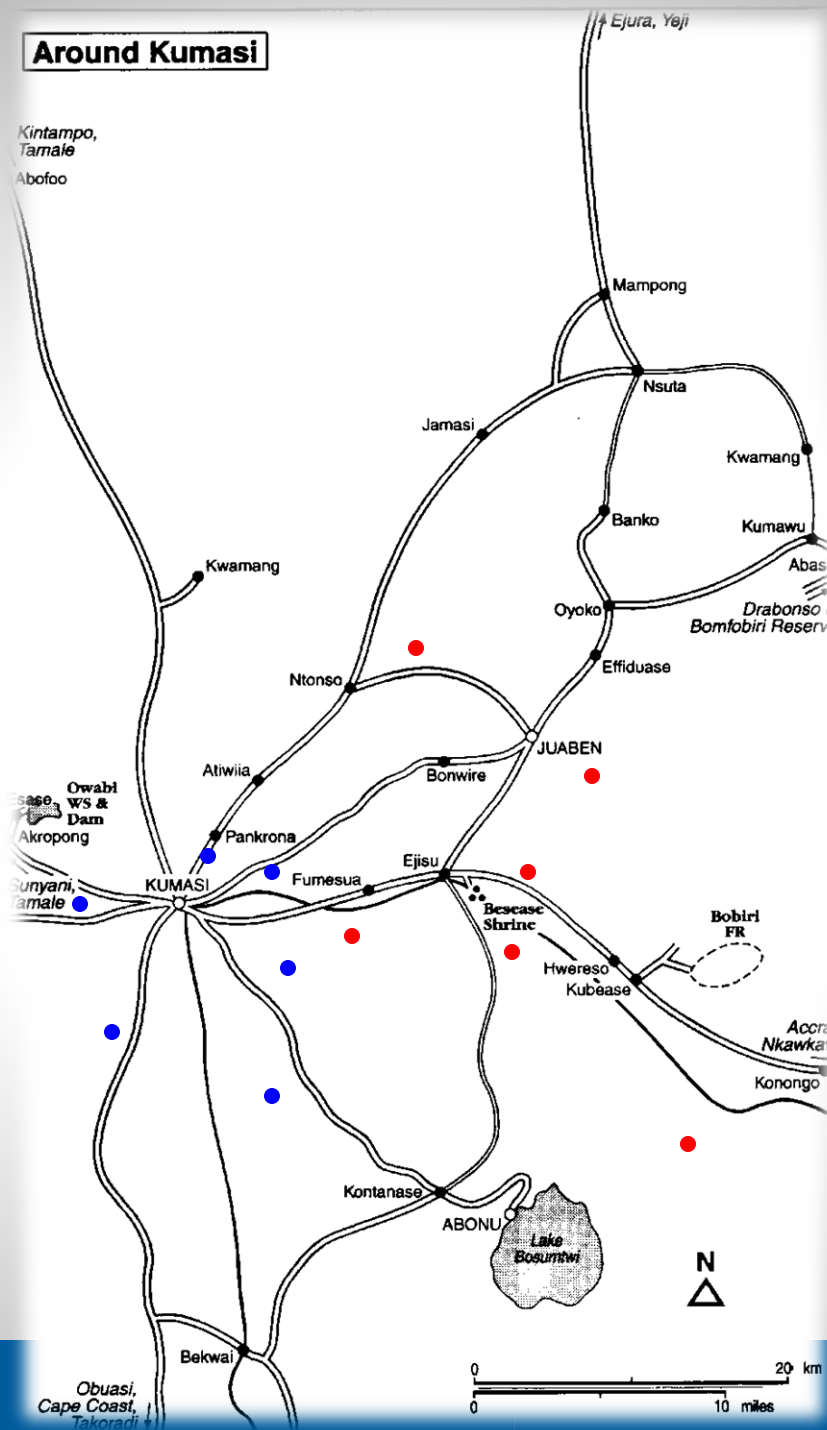
In rural and semi-urban Ashanti

- **To assess**
 - *Prevalence of hypertension, its detection, management and control*
 - Relationship between BP and BMI
 - *Sources of dietary salt*
 - *Average levels of salt intake*
 - Average levels of iodine intake
 - Relationship between BP and salt intake
 - Relationship between BP and blood viscosity
 - Distributions of other CVD risk factors (lipids, glucose, CRP, renal function)
- **To intervene with health promotion and education**
 - *To reduce population salt intake*
 - *To reduce population blood pressure*
 - To monitor iodine intake



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Around Kumasi



SEMI-URBAN

- Tikrom (n=1,966)
- Appeadu (n=1,205)
- Duase (n=1,963)
- Apatrapa (n=1,795)
- Feyiase (n=1,559)
- Nwamase (n=1,880)

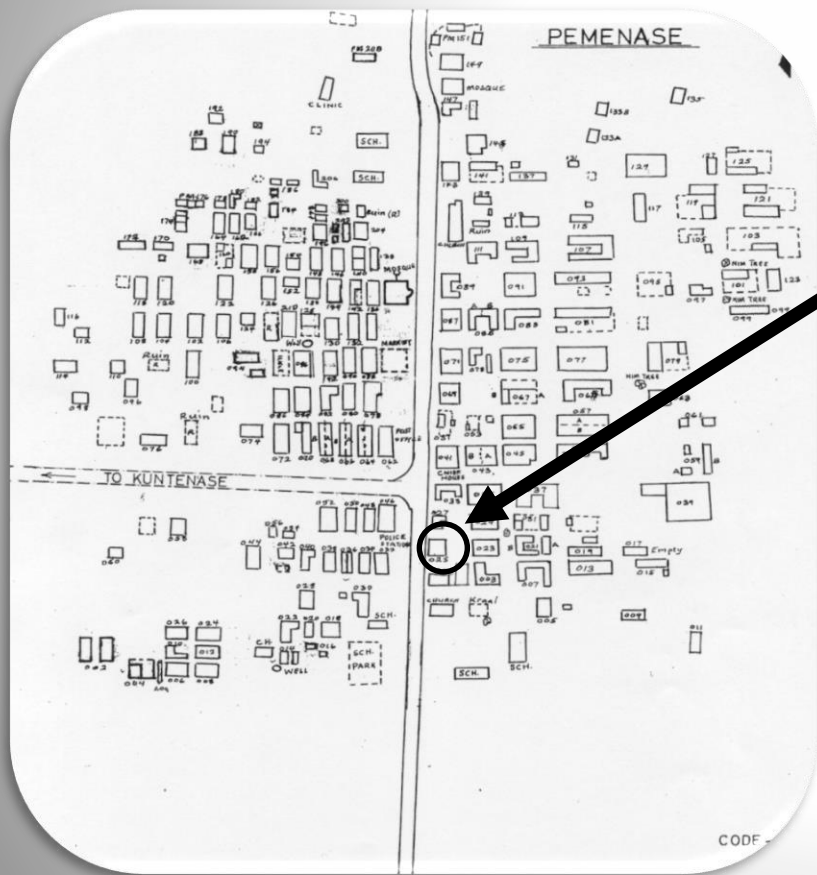
RURAL

- Pemenase (n=1,169)
- Edwenase (n=562)
- Domeabra (n=1,359)
- Ofoase (n=711)
- Atia (n=1,650)
- Dumakwai (n=1,146)



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Household Census and Enumeration





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Ethical Approval

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Informed written consent

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Height



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.... weight

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... blood pressure

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... a blood test

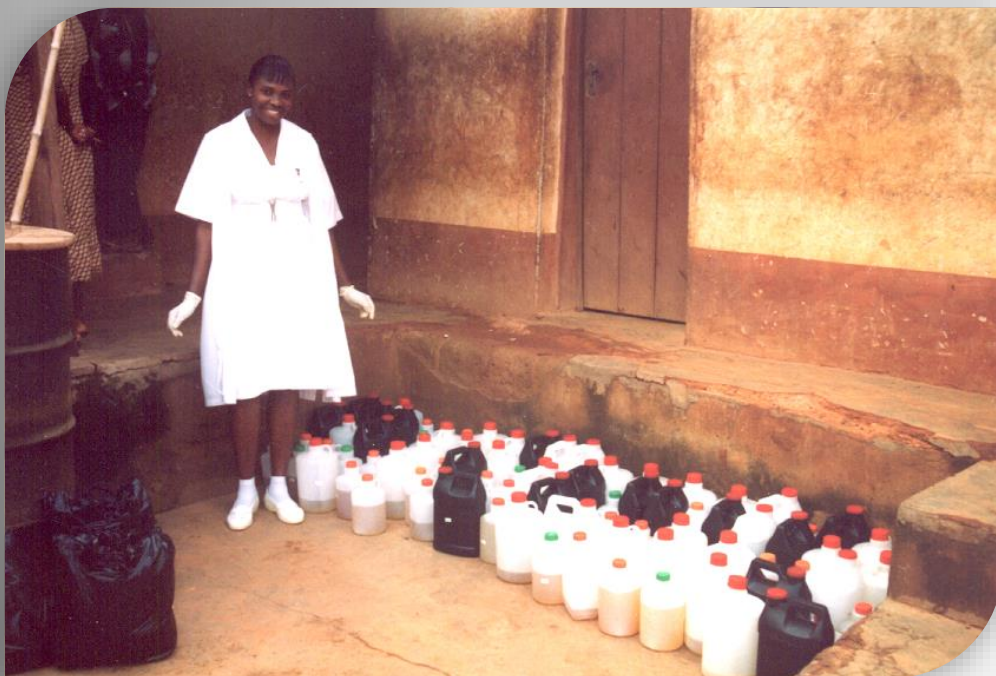
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... and 24h urine collections





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Logistics! ...

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... and local support !

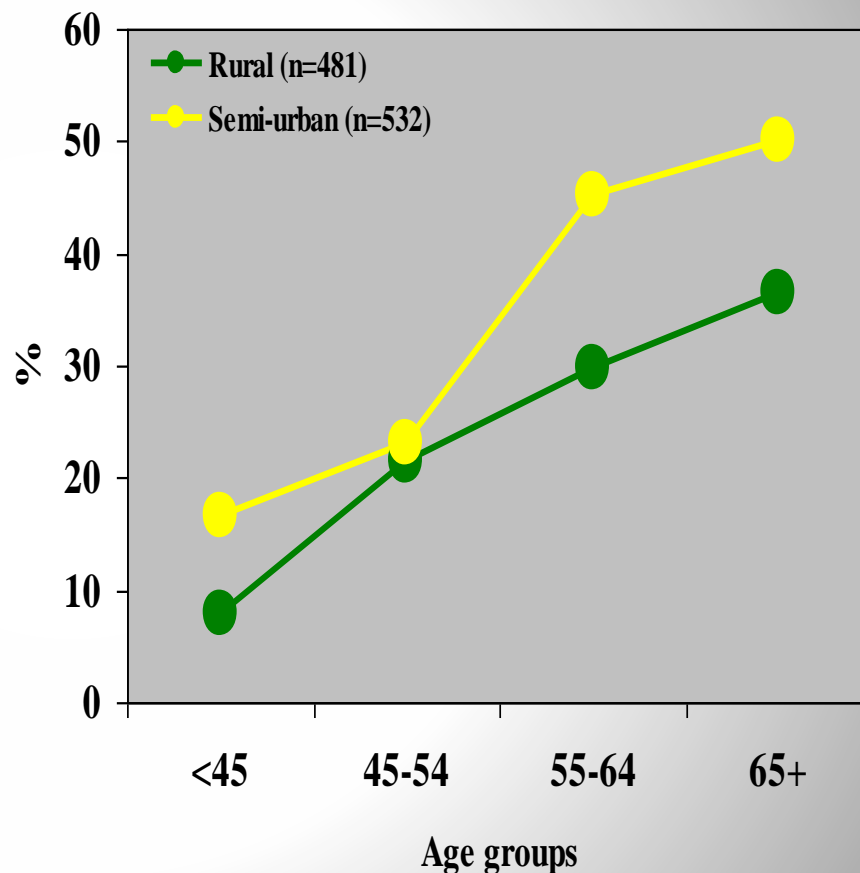
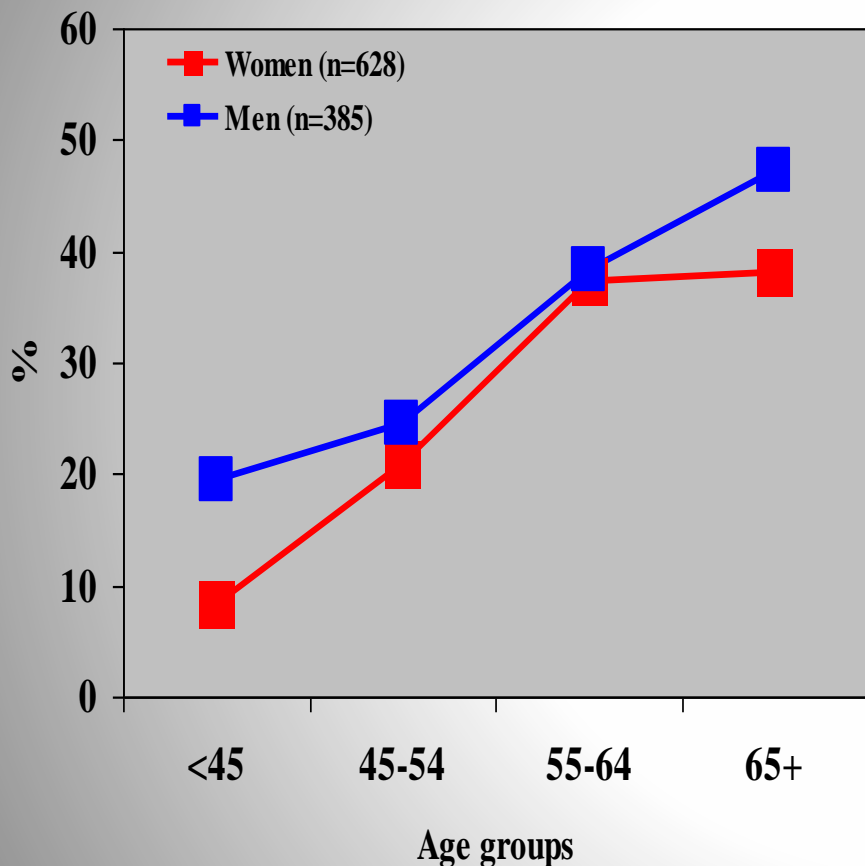
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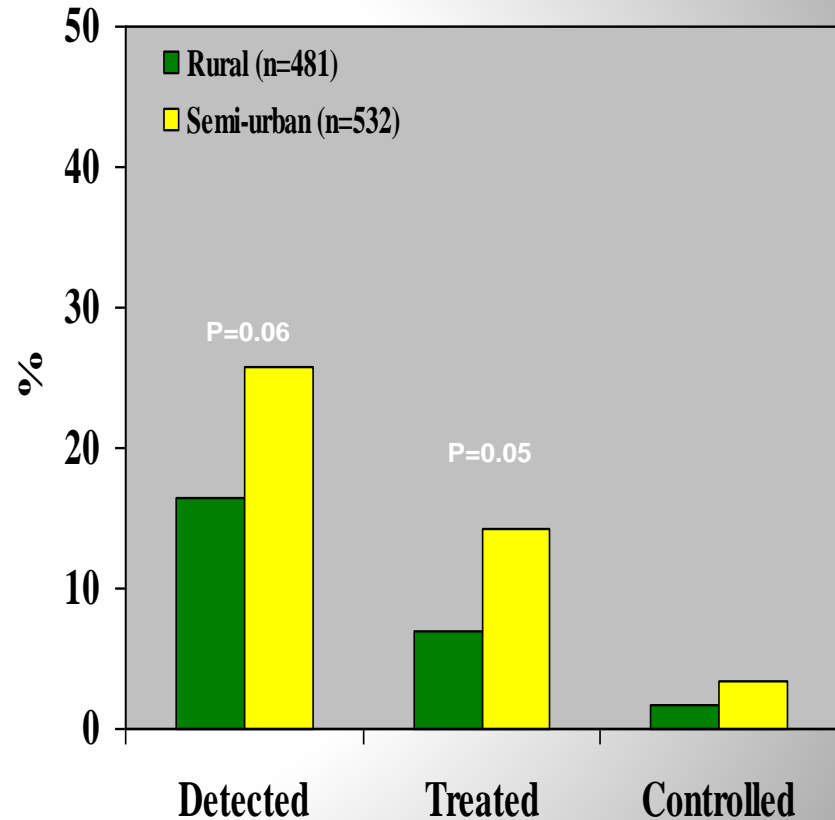
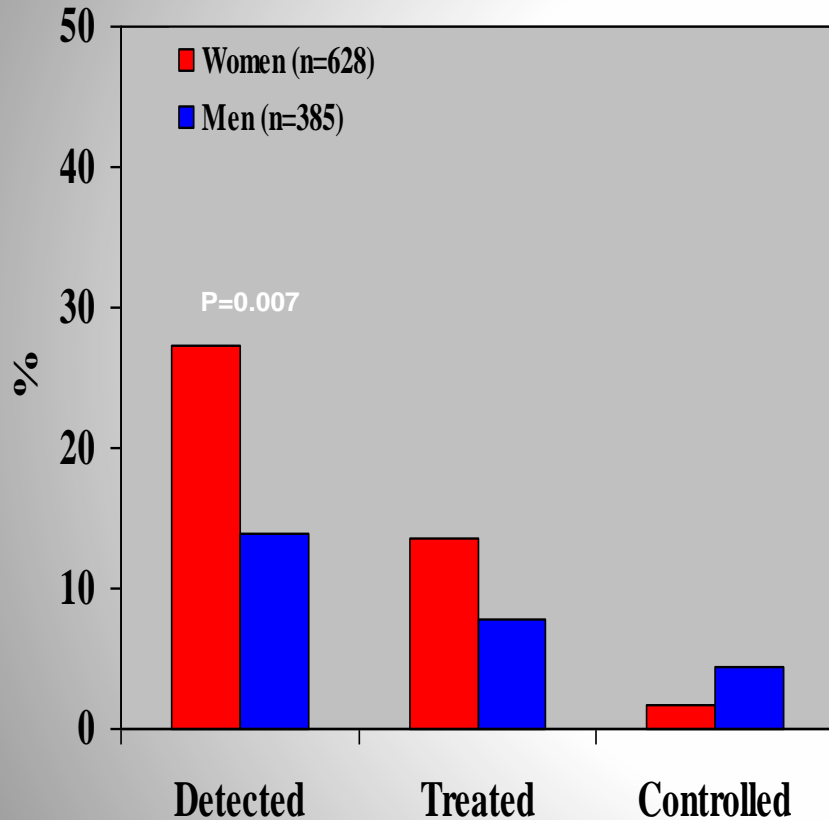
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Prevalence of hypertension by age in Ashanti



Hypertension: SBP ≥ 140 and/or DBP ≥ 90 mmHg or Rx
Overall prevalence = 28.7%

Prevalence of detection, management and control of hypertension in Ashanti





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Market mummies selling salted smoked fish in Ghana




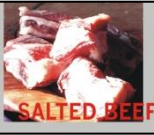



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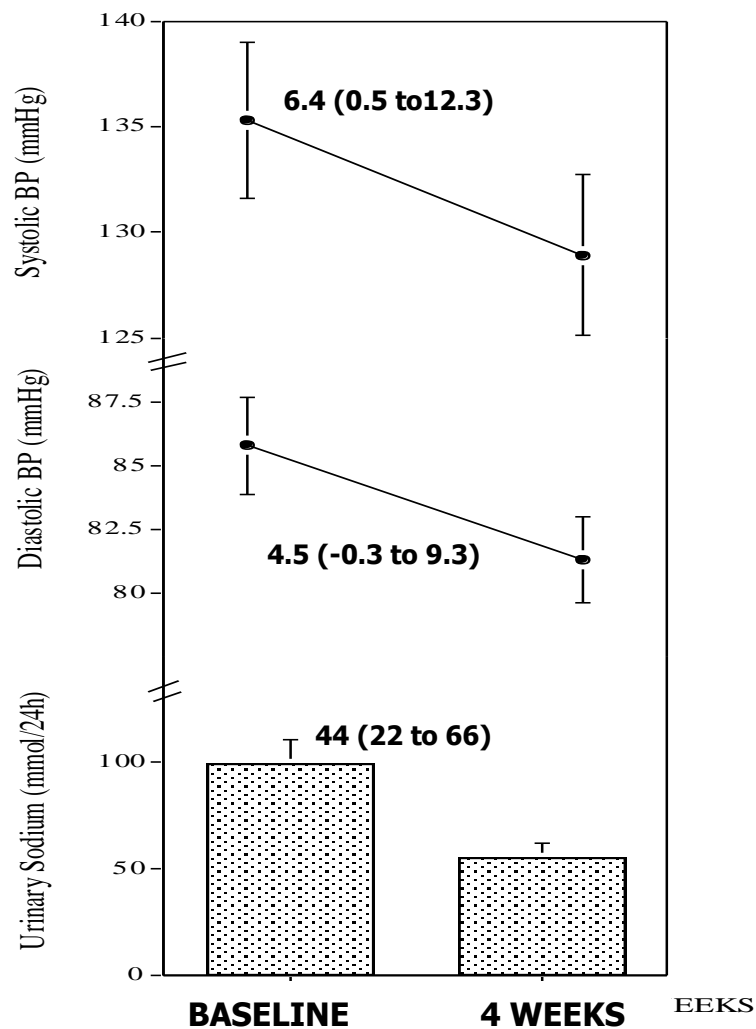
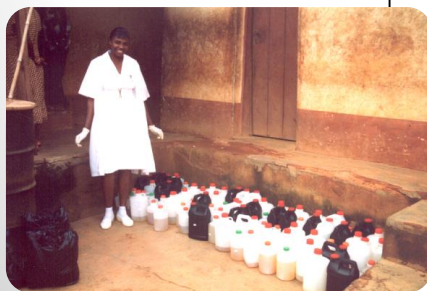
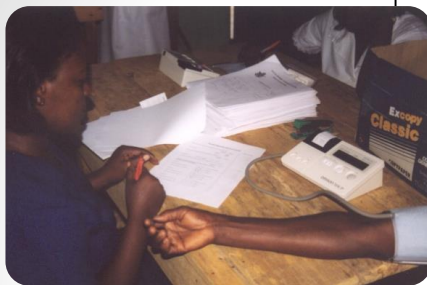
Sources of Salt in Ashanti

	Rural N=481	Semi-urban N=532	Odds Ratio (95% CI)
 Koobi	60%	42%	2.03 (1.38 to 2.99) ***
 Kako	26%	29%	0.87 (0.40 to 1.96)
 Salted pig's feet	16%	32%	0.40 (0.15 to 1.02)
 Salted beef	9%	23%	0.34 (0.13 to 0.86)*
 Cubes	52%	56%	0.85 (0.47 to 1.56)
 Added in cooking	99%	97%	1.83 (0.90 to 3.72)
 Added at table	59%	45%	1.75 (1.18 to 2.61)**

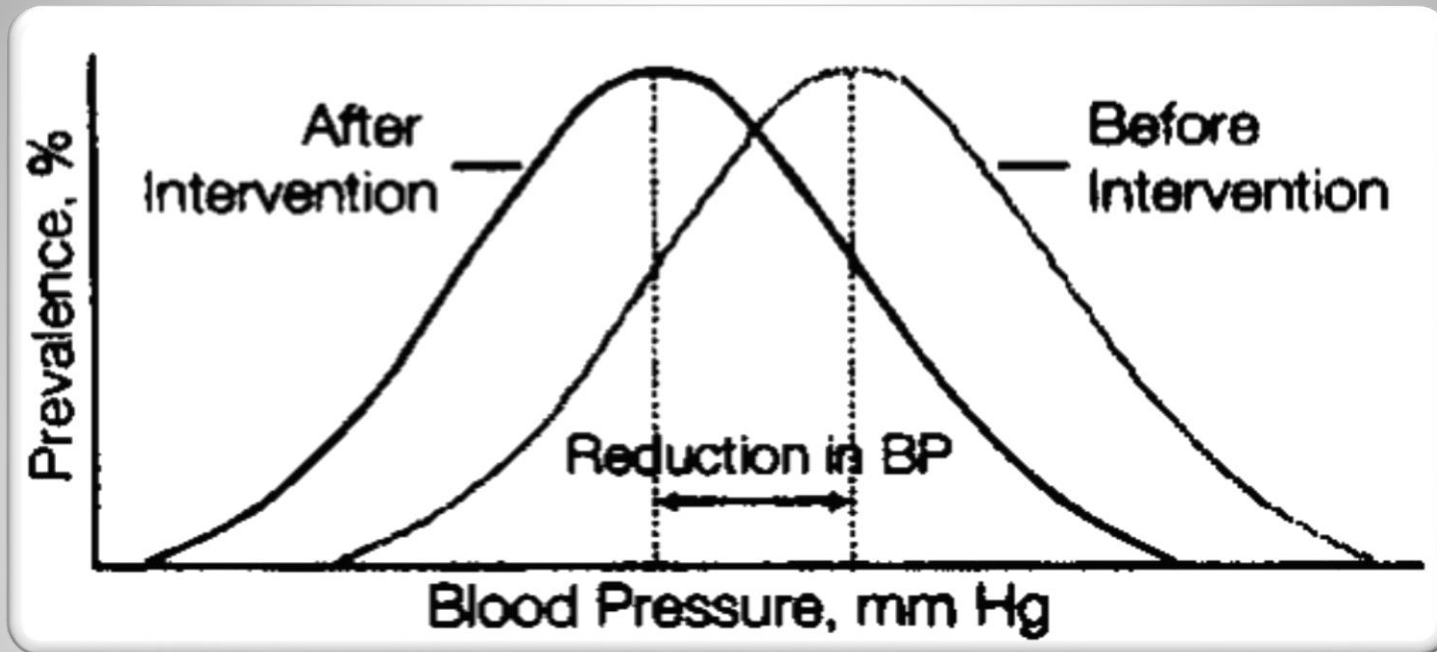


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Community dietary salt reduction in Kumasi

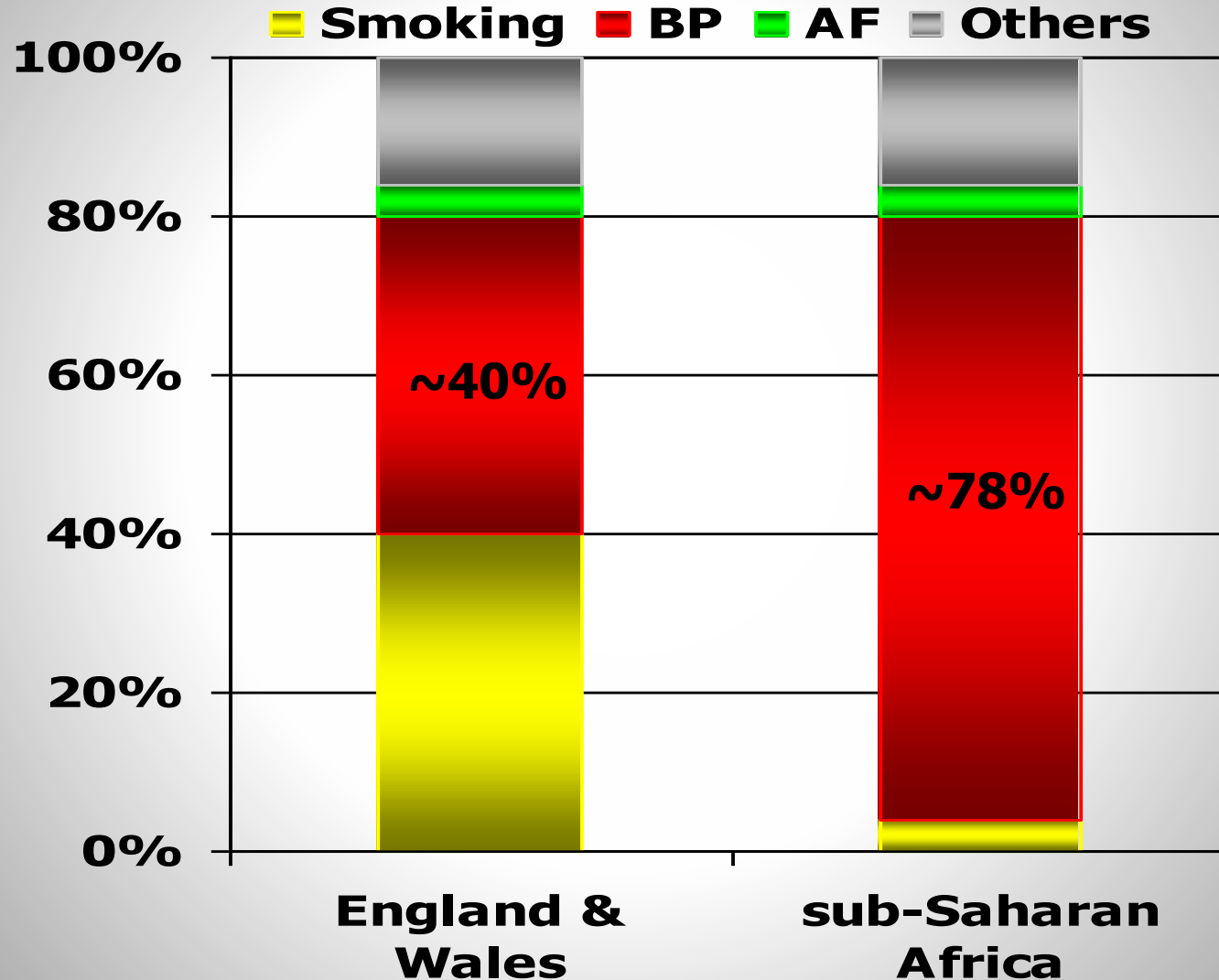


Perspectives



- In DASH-Sodium, $\Delta \sim 40$ mmol/day (from ~ 100 to ~ 60) in non-hypertensives caused a DBP of 3.4/2.0 mmHg
- In meta-analysis, $\Delta \sim 50$ mmol/day in non-hypertensives associated with a DBP of 2-4/1-2 mmHg
- Estimated effect on stroke: $\Delta \sim 50$ mmol/day with a SBP fall of 1.3 mmHg would cause a $>10\%$ reduction in strokes in non-hypertensive individuals
- In hypertensives and in black ACO individuals effect could be greater

Risk of stroke attributable to high blood pressure



Conclusions

- ✦ Hypertension is common in Ashanti, Ghana
- ✦ It is more common in semi-urban than rural areas
- ✦ Detection rates are generally sub-optimal
- ✦ Appropriate management and control are barely attained
- ✦ Population salt reduction is effective
- ✦ Urgent need for preventive strategies on hypertension control



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Strategies for hypertension control

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▶ Developed countries

- Screening programmes in place
- Detection, management and control increasing
- Drug therapy common
- Salt intake high, mainly from processed food and bread, less from discretionary sources
- High-risk strategy highly effective
- Population-based strategy of advocacy possible (government, industry, consumers etc)

▶ Developing countries

- Poor health-care provision
- Haphazard and unreliable detection
- Little management and poor control
- Salt intake moderate but on the rise (in urban areas)
- Salt in the diet mainly added to food in cooking and at the table (less so in urban areas)
- Population-based strategy of health promotion possible





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Kumasi Programme

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