Background

- Recent studies have suggested that both hypertension and hypertension-related factors (e.g., diabetes mellitus, dyslipidemia, hypercholesterolemia) are common in some regions of the African sub-Sahara (1,2).
- Until recently, hypertension and related diseases were considered rare and were not the main focus of medical intervention in this region (3).
- Recent studies among rural Ghanaians have shown widespread levels of hypertension (4,5), yet there have been no surveys on lipid disorders and diabetes mellitus among the same population.
- A previous study has suggested that among urban West Africans and African-Americans with the metabolic syndrome, fasting hyperglycemia has a low prevalence (6).
- The object of this study is to explore the prevalence of lipid disorders and rates of diabetes mellitus in this population.

Methods

- This cross-sectional study focused on rural-living adults (≥18 years old) in the Barekese sub-district of the Ashanti Region of Ghana.
- In the weeks and days prior to the day of the study, villages were notified of the upcoming study.
- Eligible participants were each assigned a unique number, which was used to track their study values.
- Anthropometric data (height, body weight, and waist circumference) were measured.
- Two resting blood pressure measurements were taken using calibrated aneroid sphygmomanometers while using American Heart Association guidelines.
- Participants, with the help of research assistants and translators, completed a structured questionnaire in their native language. The questionnaire included data such as:
  - Alcohol Use
  - Tobacco Use
  - History of diabetes or hypercholesterolemia
  - Hypertensive status and cholesterol status were classified according to categories as defined by the American Heart Association and the National Institutes of Health, respectively.

Results

- Total participants: 460
- Male: 31%
- Female: 69%
- Average Age: 47
- Age Range: 18-100
- Most Frequent Age: 20

- Pre-HTN (p<0.05)
- Stage 1 HTN (p<0.001 or p<0.05)
- Stage 2 HTN (p<0.001 or p<0.001)
- Non-normotensive (≥130 and ≤80)
- Normotensive (≥130 and ≤80)

- Normal (<25)
- Overweight (≥25)
- Obese (≥30)

- Desirable (≤200)
- Borderline High (200 - 239)
- High (≥240)

- Total Cholesterol : HDL Cholesterol Ratio

- Males: Mean: 5.3 Standard Error: 0.1
- Females: Mean: 5.6 Standard Error: 0.3

- No Previous DM Dx
- 1% Don't Know
- 4% Previous DM Dx No Medication
- 3% Previous DM Dx with Medication
- 92% Previous DM Dx with Medication

Discussion

- HYPERTENSION
  - 39% were pre-hypertensive and 39% hypertensive.
  - Only 33% were overweight or obese.
  - This discrepancy, together with the low prevalence of alcohol and tobacco use, suggests that obesity, alcohol, and tobacco are not the only causes of hypertension in this population.

- LIPID DISORDERS
  - 55% had desirable levels of total cholesterol; only 15% had desirable levels of HDL cholesterol.
  - Both males and females had high total cholesterol and HDL cholesterol ratios.
  - This indicates a high risk of heart disease for both males and females.

- HISTORY OF DIABETES MELLITUS
  - 5% reported a previous diagnosis of diabetes mellitus.
  - Low surveillance by health care professionals in this rural population may mask the true prevalence of diabetes mellitus.

Conclusion

- Hypertension is widespread among rural-living Ghanaian adults.
- High total cholesterol : HDL cholesterol ratios in both males and females suggest increased risk of heart disease in both groups.
- Nearly all participants reported no previous history of a diabetes mellitus diagnosis. Greater surveillance among this population may be needed.
- The high prevalence of hypertension, low HDL-C levels, and high total cholesterol : HDL cholesterol ratios suggest the importance of detecting and educating this population of the dangers of cardiovascular disease.

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References