



Mr Fidelis Atibila (Ghana)

Assessment of risk factors for hypertension: an application of the WHO stepwise approach

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ASSESSMENT OF RISK FACTORS FOR HYPERTENSION: AN APPLICATION OF THE WHO STEPWISE APPROACH

FIDELIS ATIBILA

OUTLINE

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BACKGROUND

- ❑ Hypertension (HPT) is an important public health challenge worldwide and is the single most important risk factor for most cardiovascular diseases.
- ❑ In excess of 1.13 billion people are said to have HPT globally; many of whom are in developing countries.
- ❑ In the Ghanaian context, over 25% of urban dwellers and 20% of rural dweller are estimated to be hypertensive (Bonsu, 2015).
- ❑ Life expectancy in Ghana has increased over the years with a corresponding increase in the risk factors for NCDs such as HPT.

BACKGROUND

- ❑ Reports from health authorities in the Dormaa Municipality show that the prevalence of HPT has been increasing over the years amidst poor management of those diagnosed.
- ❑ However, the lingering questions of what the actual prevalence rate of HPT in the area and what risk factors significantly influence the prevalence of HPT has largely remained unanswered.
- ❑ Therefore, the predominant risk factors accounting for the increasing prevalence of HPT need to be examined in the context of the Municipality.

RESEARCH QUESTIONS

The study was guided by the following research questions:

- ❑ What is the prevalence of HPT within the Dormaa Municipality?
- ❑ What are the risk factors for HPT in the study population?

METHODS

□ STUDY TYPE AND DESIGN

- Descriptive cross-sectional design

□ STUDY AREA

- Dormaa municipality

□ STUDY POPULATION

- 400 residents of Dormaa Municipality aged 25 years or above were recruited.

SAMPLING TECHNIQUE

- The participants were selected from the Dormaa area using multistage sampling technique.
 - The municipality was divided into clusters (i.e., electoral areas)
 - One electoral area was selected using simple random sampling technique
 - Participants recruited conveniently within households in the selected areas

INSTRUMENTS FOR DATA COLLECTION

- **WHO STEPwise Instrument** for evaluating risk factors for NCDs was adopted and complimented by calibrated and standard instruments (tape measure; weighing scale with a height measure; and a blood pressure apparatus(*sphygmomanometer*) in this study.
- The instrument uses a multistep approach for risk factors assessment including
 - *Collection of information using questionnaires (step 1)*
 - *Physical measurements (step 2)*
 - *Taking blood samples for biomedical assessment, (step 3).*
- **Only the first and second steps were carried out in this study.**

DATA ANALYSIS

□Descriptive statistics

- Frequency tables, and bar charts were used to present results.

□Inferential statistics

- Logistic regression analysis reporting Odds Ratio was performed

All significance level was set at 0.05.

The data was analyzed using Statistical Package for Social Scientist (SPSS) software version 21

ETHICAL CONSIDERATIONS

- Ethical clearance was obtained from the Committee on Human Research, Publication and Ethics (CHRPE), KNUST-SMS
- Permission from the Municipal Director of Health services, Dormaa-Ahenkro.
- Informed consent from participants

RESULTS AND DISCUSSION

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS

- Four hundred (400) residents of Dormaa Municipality with a **mean age of 50.06** years (95% CI: 48.46-51.66) participated in the study
 - Males were 202 (50.5%)
 - Females were 198 (49.5%).
- About 37.5% had no formal education (21.75% females and 15.75% males).
- Nearly a third (32.25%) had completed middle/Junior high

PREVALENCE OF HYPERTENSION AND RISK FACTORS

- The results show that 40% of participants in this study had elevated blood pressure ($\text{BP} \geq 140/90\text{mmHg}$) amidst significant gender and age variations.
- More males (44.6%) than females (35.4%) had elevated blood pressure at the time of the study.
- However, the proportion of participants with severe HPT at the time of the study was more than double-fold in females (6.6%) as compared to their male counterparts (3.0%).

Risk Factors Based on WHO STEPwise Approach – Step 1

Parameter	Male	Female	Total	95% CI	P-Value
Tobacco use					
<i>Percentage who currently smoke tobacco daily</i>	22.4%	1.5%	12.0%		0.000
Fruit and vegetable consumption (in a typical week)					
Mean number of servings of fruit consumed per day	1.75	1.40	1.59	1.41 – 1.74	0.036
Mean number of servings of vegetables consumed per day	3.38	2.30	2.85	2.45 – 3.26	0.009
Percentage who ate ≥5 combined servings of fruit and vegetables per day	36.1%	17.2%	26.8%		0.000
Physical Activity					
<i>Percentage with low levels of activity (defined as <600 MET-minutes/week)</i>	29.7%	46.2%	37.3%		0.004
Mean time spent in physical activity per day (hours)	3.56	2.22	2.90	2.50 – 3.29	0.000

RISK Factors Based on WHO STEPwise Approach –

Step 2

Parameter	Male	Female	Total	95% CI	P-Value
Step 2 Physical measurements					
Mean body mass index (BMI, kg/m ²)	22.89	23.51	23.19	22.75 - 23.62	0.162
<i>Percentage who were overweight or obese (BMI ≥ 25 kg/m²)</i>	18.8%	32.4%	25.3%		0.002
<i>Percentage who are obese (BMI ≥ 30 kg/m²)</i>	2.5%	7.0%	4.7%		0.034
Average waist circumference (cm)	84.52	86.99	85.70	84.54 – 86.86	0.036
Mean systolic blood pressure (SBP, mmHg)	127.1	125.9	126.49	124.4 – 128.5	0.575
Mean diastolic blood pressure (DBP, mmHg)	79.26	77.66	78.47	77.2 – 79.7	0.214
% with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg)	44.6%	35.4%	40.0%		
% with raised BP (SBP ≥ 160 and/or DBP ≥ 100 mmHg)	3.0%	6.6%	4.8%		
% with isolated systolic HPT (SBP ≥ 140 and DBP < 90 mmHg)	12.9%	9.6%	11.2%		

HYPERTENSION

Parameter	Elevated BP		
	OR	95% CI	P-Value
Tobacco status			
Smokers	2.66	1.41-5.04	0.003
Non-smokers	1		
Alcohol status			
Ever consumed	1.59	0.97-2.61	0.069
Never consumed	1		
<i>Alcohol frequency</i>			
Daily	5.28	1.09-25.41	0.038
5-6 days per week	0.45	0.05-4.06	0.478
3-4 days per week	1.36	0.30-6.08	0.690
1-2 days per week	1.44	0.42-4.98	0.565
1-3 days per month	1.50	0.54-4.18	0.438
Less than once a month	1		
Diet			
<i>Fruit & vegetable servings/week</i>			
More than 5	0.321	0.15-0.67	0.003
Less than 5	1		

SUMMARY OF KEY FINDINGS

- About 12% of the sample were current smokers whose odds of developing HPT (OR = 2.66) was significantly higher than non-smokers ($P = 0.003$)
- There was no difference in the chances of developing HPT among those who ever consumed alcohol and their counterparts who never did
 - ✓ However, the odds of developing HPT became significantly higher (OR = 5.23) when it became a daily affair ($P=0.038$)
- Twenty-five percent (25%) were either overweight or obese which was more prevalent in females (34.2%) than in males (18.8%)
- There is a thread of hope: eating at least 5 servings of fruits carried significantly lower odds of developing HPT (OR = **0.321**, $P= 0.003$).

SUMMARY OF KEY FINDINGS

CONT'D

- The odds of a female developing hypertension was higher than their male counterparts ($OR=0.492$, $P=0.012$) probably because
 - Females had significantly lower levels of physical activities (46.2) as compared to males and with higher prevalence of obesity than males.

CONCLUSION

- ❑ The study found a seeming ‘epidemic’ of hypertension in the study area, a situation that calls for urgent public health action
- ❑ High levels of smoking; alcohol consumption; overweight and obesity; and increasing physical inactivity are risk factors.

NB. Given the abundance of fruits in Ghana, a public campaign along similar lines could prove beneficial in controlling HPT

- ❑ Prevention and control of hypertension in Ghana is thus imperative and any delays in instituting preventive measures would most likely pose a greater challenge on the already overburdened health system.

RECOMMENDATIONS

- Intensify public education on the risk factors for Hypertension
- Strengthen and improve upon the regenerative health initiated by the MOH
- Promote the formation of keep-fit clubs within the communities
- Expansion of specialised clinics (e.g., HPT clinic) in health facilities in Ghana
- Operationalization of the public health act against smoking in public places
- Provision of adequate funds for implementation research to be conducted in the area of hypertension



THANK YOU