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Prevalence of Hypertension in the Workplace in the Democratic Republic of Congo: A Case Study of the Administrative Building (BATAM) at the University of Kisangani (UNIKIS)

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Abstract

Background: Hypertension is a major public health concern in sub-Saharan Africa, yet workplace-specific data in the Democratic Republic of Congo (DRC) remain scarce. This study aimed to determine the prevalence of hypertension and its associated factors among workers at the Administrative Building (BATAM) of the University of Kisangani (UNIKIS). **Methods:** A cross-sectional study was conducted from September 1 to October 31, 2023, among 201 permanent workers. Participants were recruited via systematic random sampling (every 3rd employee from a roster of 603 eligible workers). Blood pressure was measured three times using a validated SCIAN LD-520 device, following WHO protocols. Hypertension was defined as systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg, or current an-

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tihypertensive use. Multivariable logistic regression was used to adjust for confounders. **Results:** The prevalence of hypertension was 38.8%. Significant predictors included age (adjusted odds ratio [aOR] = 1.12, 95% CI: 1.08 - 1.17), male gender (aOR = 2.45, 95% CI: 1.18 - 5.08), physical inactivity (aOR = 2.67, 95% CI: 1.48 - 4.82), and obesity (aOR = 3.21, 95% CI: 1.89 - 5.45). **Conclusion:** Hypertension is highly prevalent among BATAM workers, necessitating urgent workplace interventions such as annual screenings and health promotion programs.

Keywords

Hypertension, Workplace, Prevalence, Democratic Republic of Congo, Cardiovascular Risk

1. Introduction

Hypertension (HTN) is a leading cause of cardiovascular disease (CVD) globally, with sub-Saharan Africa (SSA) bearing a disproportionate burden [1].

In the DRC, general population studies report HTN prevalence rates between 14.2% and 28.3% [2] [3], but workplace-specific data are absent. Workplace environments, characterized by stress, sedentary behavior, and unhealthy lifestyles, may exacerbate HTN risk [4].

Recent studies in Nigeria (38.2%) [5] and Ghana (41.5%) [6] highlight high workplace prevalence, underscoring regional disparities. This study addresses the critical gap in Congolese workplace data by investigating HTN prevalence and associated factors among workers at BATAM and UNIKIS.

2. Methods

2.1. Study Design and Setting

A cross-sectional study was conducted at BATAM, UNIKIS (Kisangani, DRC), from September 1 to October 31, 2023.

2.2. Study Population

Eligible participants were permanent workers aged ≥18 years with ≥1 year of service. Exclusion criteria included temporary employment, pregnancy, or refusal to consent. Participants were selected via systematic random sampling (every 3rd worker from a list of 603 eligible employees).

2.3. Sample Size Calculation

The sample size was calculated using the formula:

$$N \geq Z_{\frac{a}{2}}^{2} \frac{P(1-P)}{d^{2}}$$

where $Z = 1.96$ (95% confidence level), $P = 0.325$ (expected HTN prevalence [7]),

and $d = 0.07$ (precision). This yielded $n = 201$.

2.4. Data Collection

- Ethical Approval: Obtained from UNIKIS's Institutional Review Board (Ref: UNIKIS/IRB/2023-09).
- Consent: Written informed consent was secured from all participants prior to enrollment.
- Blood Pressure Measurement: Three measurements were taken at 5-minute intervals after 10 minutes of rest, following WHO guidelines. The average of the last two readings was recorded.
- Anthropometrics: Weight, height, and waist circumference were measured using standardized protocols.

2.5. Statistical Analysis

Data were analyzed using SPSS® v20 and R® v3.6.1.

Multivariable logistic regression was performed to adjust for confounders (age, gender, income). Variables with $p < 0.20$ in bivariate analyses were included.

3. Results

3.1. Sociodemographic Characteristics (Table 1)

The study included 201 participants (75% male, mean age: 52.3 ± 13 years). Most were married (86%) and university-educated (88%).

Table 1. Sociodemographic characteristics of the study population.

Characteristics	Estimations, N = 201 n (%)
Age (years)	52.3 (13)[1]
Gender	
Female	51 (25%)
Male	150 (75%)
Education level	
Secondary	24 (12%)
University	177 (88%)
Marital status	
Married	172 (86%)
Single	17 (8.5%)
Widowed	7 (3.5%)
Divorced	5 (2.5%)
Residence commune	
Makiso	93 (46%)

Continued

Mangobo	43 (21%)
Tshopo	23 (11%)
Kisangani	21 (10%)
Kabondo	19 (9.5%)
Lubunga	2 (1.0%)
Number of dependents	5.74 (3.42)[1]
0 - 5	110 (55%)
6 - 10	72 (36%)
More than 10	19 (9.5%)
Monthly income (in US Dollars)	308 (169.8)[1]
0 - 250	63 (31%)
251 - 500	60 (30%)
More than 500	18 (9.0%)
Not reported	60 (30%)

[1]Moyenne (ET).

3.2. Prevalence of Hypertension (Table 2)

Overall prevalence was 38.8% (n = 80), with 35% isolated systolic, 35% isolated diastolic, and 30% combined hypertension.

Table 2. Prevalence of hypertension among workers at BATAM, 2023.

High blood pressure	Number, N = 201	%
Absent	121	60.2%
Present	80	39.8%
The hypertensives	**Number, N = 80**	**%**
Systolic hypertension only	28	35.0%
Diastolic hypertension only	28	35.0%
Systolic and diastolic hypertension	24	30.0%

3.3. Risk Factors

After multivariable adjustment (Table 3), age, male gender, physical inactivity, and obesity remained significant predictors.

Table 3. Adjusted odds ratios for hypertension risk factors.

Factor	aOR	95%	p-value
Age (per year)	1.12	1.08 - 1.17	<0.001
Male gender	2.45	1.18 - 5.08	0.016
Physical inactivity	2.67	1.48 - 4.82	0.001
Obesity (BMI ≥ 30)	2.67	1.89 - 5.45	<0.001

4. Discussion

4.1. Key Findings

The 38.8% HTN prevalence exceeds rates reported in Cameroon (28.5%) [8] but aligns with Nigerian workplace studies [5]. This discrepancy may reflect the older age of participants (mean = 52.3 vs. 42.1 years in Cameroon) and higher occupational stress.

The strong association with male gender contrasts with some SSA studies [9], potentially due to cultural norms influencing health-seeking behavior.

4.2. Policy Implications

- Implement mandatory annual hypertension screenings in workplaces.
- Develop on-site wellness programs targeting physical activity, smoking cessation, and dietary habits.
- Integrate workplace health initiatives into national non-communicable disease (NCD) strategies.

4.3. Limitations

Single-timepoint blood pressure measurements may overestimate prevalence. Future studies should use 24-hour ambulatory monitoring.

5. Conclusion

This study highlights a critical hypertension burden among BATAM workers. Urgent workplace interventions, including regular screenings and health education, are essential to mitigate CVD risk in the DRC.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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