



Prevalence, Awareness and Control of High Blood Pressure in a Semi-Urban Area of Cameroon: An Analysis of May Measurement Month 2019 Screening Results

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How to cite this paper: Danwe, D., Amougou, S.N., Choumi, A.T., Ouankou, C.N., Bala, L.A., Adala, P.S. and Lemougoum, D. (2019) Prevalence, Awareness and Control of High Blood Pressure in a Semi-Urban Area of Cameroon: An Analysis of May Measurement Month 2019 Screening Results. *Open Access Library Journal*, 6: e5955. <https://doi.org/10.4236/oalib.1105955>

Received: November 25, 2019

Accepted: December 20, 2019

Published: December 23, 2019

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Abstract

Background: High blood pressure (HBP) is a global health crisis. More than one billion people in the world suffer from HBP and most of them live in low and middle income countries where the prevalence is increasing. Unawareness, low treatment and control rates are the main barriers to the fight against this disease and the associated cardiovascular disease risk. **Aims:** To highlight the importance of measuring blood pressure and identify and reduce the blood pressure (BP) of those who require an intervention to lower their BP according to current guidelines. **Methods:** This was a cross-sectional study. A HBP screening was organized in two market places and at the district hospital of a semi-urban area in Cameroon during three days—from the 28th to the 30th May 2019. We included all people aged at least 18 years and who accepted to take part to the study. We used a predesigned form and electronic blood pressure machines for the screening. HBP was defined as having a BP \geq 140/90 mmHg or taking antihypertensive medications. All statistical analysis were done using IBM SPSS version 20.0. **Results:** We included 200 people in the study. Women were more represented in our sample (57.5%) and the median age was 40 years [30 - 51]. More than a third of the participants had not taken their BP in the past year and 16% of them had never measured their BP. HBP was detected in 49 (24.5%) people among whom 25 (51.0%) were aware of their condition. Among those who were aware they had HBP, 17 (68.0%) were taking antihypertensive medications and as a single drug regimen in most cases (64.7%). BP was controlled in 9/17 (52.9%) people. **Conclusion:** Nearly one quarter of people living in semi-urban area in Cameroon has

HBP. We have found in this area a high rate of unawareness and undertreatment of HBP.

Subject Areas

Cardiology

Keywords

Prevalence, Awareness, High Blood Pressure, Semi-Urban, Cameroon

1. Introduction

High blood pressure (HBP) is a health crisis worldwide. Mills *et al.* estimated that 1.39 billion people had high blood pressure in the world, 349 million in high income countries and 1.04 billion in low and middle income countries [1]. Low awareness, treatment and control rates are the main obstacles to the fight against hypertension and associated cardiovascular disease risk, especially in low and middle income countries [2]. The International Society of Hypertension (ISH) therefore initiated since 2017 a global campaign of high blood pressure screening named May Measurement Month (MMM) in order to improve the world's health through raised awareness around blood pressure (BP). Analysis of the worldwide results of the MMM 2018 reported a hypertension prevalence of 33.4% of whom 59.5% were aware of their diagnosis and 55.3% were taking anti-hypertensive medication. Still the same year, 60% of those on antihypertensive medication had their BP controlled [3]. In comparison, the prevalence of hypertension was higher in 2017 (34.9%) and there was a lower rate of BP control (53.7%) [4]. The MMM 2017 in Cameroon revealed a prevalence of hypertension of 29.2% of whom 19.8% were not taking anti-hypertensive medication and 57.2% had uncontrolled BP [5]. This year again, Cameroon took part in the MMM 2019 and we had a screening site in the town of Mbalmayo, a semi urban area situated at approximately 50 kilometers from Yaoundé, the Capital city. We analyzed the screening results at the local level in order to obtain site specific trends of hypertension, so we may adapt our policies concerning hypertension treatment and prevention in this area.

2. Methods

2.1. Aims

To highlight the importance of measuring blood pressure and identify and reduce the BPs of those who require an intervention to lower their BP according to current guidelines.

2.2. Screening Setting and Duration

MMM in Cameroon was coordinated by the Cameroon Cardiac Society (CCS),

the Clinical Research Education, Networking and Consultancy (CRENC), a not for profit research organization, and Fondation Coeur et Vie (FoCev). In Mbal-mayo, the diabetes and hypertension clinic of the Mbalmayo District Hospital was responsible for the screening sites. The staff of the clinic was made of one cardiologist, three general practitioners and three nurses. There were also some volunteers who took part in the screening campaign. The last was done in two market places and in the Mbalmayo District Hospital during 3 days.

2.3. Inclusion Criteria

All people aged ≥ 18 years and who gave consent for participation were included in the study.

2.4. Procedure

1) Data collection was done using a screening sheet available as an appendix of this article.

2) We started by providing information about the study and collecting consent for participation. The following data were collected on all screenees: Date of measurement, age, sex, at least 1 SBP, DBP and heart rate.

3) BP measurements: BP was measured on the left upper-arm by an automated electronic device of the OMRON® or MAGNIEN® brands and ensuring that the correct size of arm cuff is used. The cuff was placed at the heart level and the patient's arm was resting comfortably on a table.

4) Prior to measurement:

- The participant was seated with their backs supported and with their legs resting on the ground and in the uncrossed position for 5 min.
- The participants had not smoked immediately before or during the measurement.

5) One to three BP readings were taken and recorded with 1 min between readings.

6) For each BP reading, the automated BP devices also provided data on heart rate, and this information was also captured.

7) Data collected on each participant were recorded and submitted into the database via the MMM app (produced by Clarifi Media).

8) Definition of hypertension:

- being on at least one antihypertensive medication taken for raised BP or;
- the average SBP (mean of the last 2 of 3 readings) ≥ 140 mmHg and/or;
- the average DBP (mean of the last 2 of 3 readings) ≥ 90 mmHg.

2.5. Statistical Analysis

Data collected at the Mbalmayo screening sites were analyzed using IBM SPSS Statistics software version 20.0. Analyses done were:

- prevalence of hypertension and its risk factors;
- prevalence of previously undiagnosed hypertension;

- prevalence of antihypertensive medication use;
- prevalence of uncontrolled hypertension.

2.6. Ethical Considerations

All participants gave an informed consent prior to their inclusion in this study. Confidentiality was fully observed during the management of the data collected.

3. Results

We included 200 people in this study. Women were more represented with a percentage of 57.5%. **Table 1** shows the clinical characteristics of our study population. The median age was 40 [30 - 51] years. All but one of the participants were from black African ethnicity. Nearly half of them (48.5%) had taken their BP less than 12 month before, meanwhile 16.0% had never taken their BP. Forty-nine (24,5%) people had hypertension, among whom 25 (51,0%) were aware of their disease. Of those who were known hypertensive, 17 (68.0%) were taking anti-hypertensive medications, 11 (64.7%) on single drug regimen, 3 (17.6%) on two drugs regimen, 1 (5.9%) on three drugs regimen and 2 (11.8%) didn't know how many drugs they were taking. Hypertension was controlled in 9/17 (52.9%) people. **Table 2** demonstrates the prevalence of other cardiovascular risk factors found in our sample.

4. Discussion

This study was done using data obtained during a screening campaign organized

Table 1. Clinical characteristics of the study population.

	Men (n=85) m (IQR)	Women (115) m (IQR)	Total (200) m (IQR)
Age (years)	39 (26 - 50)	42 (32 - 52)	40 (30 - 51)
Weight (Kg)	72 (65 - 83)	75 (65 - 88)	74 (65 - 85)
BSA (Kg/m²)	24.80 (22.99 - 27.5)	28.04 (23.74 - 33.53)	26.26 (23.56 - 31.21)
PAS (mmHg)	125 (116 - 133)	117 (110 - 130)	121 (111 - 131)
PAD (mmHg)	79 (71 - 86)	79 (73 - 86)	79 (72 - 86)
FC (bpm)	76 (66 - 81)	81 (74 - 88)	78 (70 - 86)

Table 2. Prevalence of other cardiovascular risk factors

Risk factors	Number	Percentage (%)
Obesity	62	31.0
Diabetes	9	4.5
Smoking	25	12.5
Alcohol consumption at least once a week	83	41.5
Past history of stroke	2	1.0
Past history of gestational hypertension/preeclampsia	8	4.0

in a semi-urban area in Cameroon as a part of the global May Measurement Month 2019 (MMM19) campaign initiated by the International Society of Hypertension (ISH). We focused here on the specificity of the semi-urban area of Mbalmayo in the Centre region of Cameroon. The HBP prevalence in this study was lower than the 29.2% found by Dzudie *et al.* in 2017 and 29.7% found by Kingue *et al.* in urban area in 2015 [5] [6]. It was commonly thought that there was a urban-rural gradient of hypertension prevalence, but some observational studies show that the prevalence of HBP may be equal in urban and rural areas or even higher in rural areas depending on the country and region [7] [8] [9]. Arrey *et al.* found a higher prevalence of 31.1% in a rural area of Cameroon [10]. Similar studies need to be done in other semi-urban areas of the country to determine if this is not a site specific finding. The awareness rate we found was far higher than the results of other studies done both in urban or rural areas of Cameroon [6] [10] [11]. The other studies were community based with a multi-stage sampling method. For this screening, advertisement was used to invite people. Therefore, people having HBP or who thought they may have it were more likely to go to the screening points. However, the lower prevalence of hypertension in our study compared to the others contradicts this explanation. We also found in this study a greater percentage of people on anti-hypertensive medication and a higher control rate compared to the other areas despite the fact that it remains low [5] [10] [11]. Most of the patients on anti-hypertensive drugs were taking a single drug class. This does not correspond to the new European Society of Cardiology and the European Society of Hypertension 2018 guidelines for the management of hypertension which recommend a dual combination as initial therapy in most patients [12]. This low application of the guidelines is surely responsible for the low control rate we have and we need to correct it.

5. Conclusion

Nearly one person on four has hypertension in the Mbalmayo area. Half of the people having hypertension are aware of their condition and most of them are under treatment. There is a low control rate and the new hypertension treatment guidelines are not well applied.

Authors' Contribution

DD and SNA designed the study; DD, PSA, ATC and LAB collected the data. DD and CNO did the statistical analysis; DD, SNA and CNO drafted the manuscript; DD, ATC, CNO and SNA did the discussion and manuscript revision.

Acknowledgements

We address our thanks to the International Society of Hypertension (ISH), the Clinical Research Education Networking and Consultancy (CRENC), Denk Pharma and all the volunteers who participated in the screening.

Conflicts of Interest

The authors declare no competing interest.

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