Scientific Research Publishing

World Journal of Cardiovascular Diseases, 2025, 15(12), 650-663
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

Contribution of Ambulatory Blood Pressure Measurement (ABPM) in the Screening and Diagnosis of Adult Hypertension at the Polyclinic "Alliance Médicale" in Bamako

Ibrahima Sagara[1,2], Hamidou Oumar Ba[1*], Djénébou Traoré[3], Aissata Guindo[2,4], Ibrahim Dembélé[4], Boubacar Diarra[1], Mamadou Kassery Doumbia[1], Fatou Traoré[2], Ibrahim Coulibaly[2], Makan Camara[2], Simon Konaté[2], Ibrahima Sangaré[1], Noumou Sidibé[1], Ichaka Menta[1]

[1]University Hospital Gabriel Touré, Bamako, Mali
[2]Polyclinique Alliance Médicale "ALMED", Bamako, Mali
[3]University Hospital "Hôpital du Mali", Bamako, Mali
[4]University Hospital Point G, Bamako, Mali
Email: *bhamiba@yahoo.fr

How to cite this paper: Sagara, I., Ba, H.O., Traoré, D., Guindo, A., Dembélé, I., Diarra, B., Doumbia, M.K., Traoré, F., Coulibaly, I., Camara, M., Konaté, S., Sangaré, I., Sidibé, N. and Menta, I. (2025) Contribution of Ambulatory Blood Pressure Measurement (ABPM) in the Screening and Diagnosis of Adult Hypertension at the Polyclinic "Alliance Médicale" in Bamako. *World Journal of Cardiovascular Diseases*, **15**, 650-663.
https://doi.org/10.4236/wjcd.2025.1512057

Received: October 19, 2025
Accepted: December 21, 2025
Published: December 24, 2025

Abstract

Background: ABPM is a blood pressure measurement performed outside of a doctor's office using a fully automated device, mostly over a 24-hour period. There is limited data on ABPM in the private healthcare sector, motivating the present study. **Objective:** The objective was to analyze the contribution of ambulatory blood pressure monitoring in screening and diagnosis of adults hypertension. **Methods:** This was a cross-sectional, descriptive study conducted at the Polyclinic "Alliance Médicale" between August 2022 and July 2025. It included all subjects aged 18 years or older, with no history of hypertension, who underwent ABPM. **Results:** Of the 289 ambulatory blood pressure monitoring (ABPM) sessions performed during the study period, 104 were for treatment (36%) and 185 were for screening and diagnosis (64%). In the general population, the 30 - 44 (40%) and 45 - 59 (32%) age groups were the most represented, with a mean age of 45 ± 14 years and a range of 19 to 95 years. Males predominated (52%), with a male-to-female ratio of 1.08. The indication was for screening in 55 patients (30%) and for a diagnosis of hypertension in 130 patients (70%). The mean 24/7 blood pressure was 131 mmHg for systolic blood pressure and 82 mmHg for diastolic blood pressure, with a mean heart rate of 81 bpm. The mean pulse pressure was 50 mmHg and was abnormal in 11% of patients. Ambulatory blood pressure monitoring (ABPM) confirmed the diagnosis of masked hypertension in 25% and white coat hyperten-

sion in 17%. The proportion of hypertension was 66%, both overall and for men and women, and increased with age. In those 60 and over, hypertension was more frequent in women than in men (92.3% vs. 61.1%). The mean age of hypertensive patients was 47 ± 13 years, with a male predominance and the most prevalent age groups being 30 - 44 years (40%) and 45 - 59 years (35%). A non-dipper profile was observed in 56% of hypertensive patients. Sixteen percent of hypertensive patients had a pulse pressure greater than or equal to 60 mmHg. Individuals aged 60 and over represented 60% of patients with abnormal pulse pressure and two-thirds of patients with isolated systolic hypertension. **Conclusion:** Hypertension is common, and its prevalence increases with age. Despite the availability of ambulatory blood pressure monitoring (ABPM), it is less frequently prescribed in daily practice.

Keywords

ABPM, Screening-Diagnosis, Hypertension, Bamako

1. Introduction

Hypertension is the most prevalent cardiovascular disorder worldwide, defined as a confirmed office blood pressure of 140/90 mmHg or higher. According to the WHO, it affects 1.28 billion adults aged 30 to 79 years globally, two-thirds of whom live in low- or middle-income countries [1].

It is a predominantly asymptomatic condition, generally detected through routine or opportunistic screening in medical settings [2]-[5]. For a diagnosis to be made, confirmation is recommended by measurements taken outside the office (LMWH or ABPM) or at least a repeat measurement taken in the office during a subsequent visit [1].

ABPM is a blood pressure measurement performed outside the doctor's office using a fully automated device, generally over a 24-hour period. Readings are generally taken every 15 to 30 minutes during the day (typically from 7 a.m. to 11 p.m.) and every 30 to 60 minutes at night (generally from 11 p.m. to 7 a.m.) [1].

For initial screening, a rapid reassessment, preferably with ABPM (Ambulatory Blood Pressure Monitoring) or home blood pressure monitoring, is necessary within a few days to a few weeks, but no more than four weeks or months, if the blood pressure is greater than 160/100 mmHg. This timeframe is reduced to one week if the blood pressure is greater than 180/110 mmHg without a hypertensive emergency [1].

ABPM provides more representative information than office blood pressure monitoring regarding the cardiovascular and target organ damage risks to which the patient is exposed. Its indications are well established, and the information it provides is invaluable for diagnosis, treatment, and prognosis [6].

Despite its numerous advantages, ABPM is underutilized by physicians in Mali, according to several studies. In 2021, in a sample of 250 physicians surveyed, over

66% had never requested ambulatory blood pressure monitoring (ABPM) and 88.4% did not know how to analyze ABPM data [7].

From January 2017 to December 2024, the Gabriel Touré University Hospital Center performed only 588 ABPMs, or 84 per year [8].

Most of these ABPM studies conducted in Mali took place in the public sector. Therefore, we initiated this study to analyze the contribution of ambulatory blood pressure monitoring to the screening and diagnosis of adult hypertension at the Alliance Médicale Polyclinic in Bamako.

2. Methods

2.1. Study Site

The polyclinic "Alliance Médicale" served as the study site. It is one of the first and most important polyclinic in Bamako created in February 2005 with all clinical and diagnostic services.

2.2. Study Design

This was a cross-sectional, descriptive study conducted between August 2022 and July 2025. Ambulatory blood pressure monitoring (ABPM) was performed using a Contec ABPM 50 device, with measurements taken every 15 minutes during the day and every 30 minutes at night. In general, we defined the daytime period as between 7:00 a.m. and 10:00 p.m., and the nighttime period as between 10:00 p.m. and 7:00 a.m. the following day. These times were then adjusted according to each patient's wake-up and sleep-wake cycle. Ambulatory blood pressure (ABPM) data were collected and processed using the software provided with the device.

2.3. Study Population and Selection Criteria

All subjects aged 18 years or older, with no history of hypertension, who underwent ambulatory blood pressure monitoring (ABPM) were included. Subjects with known hypertension and those with less than 27 valid ABPM-measurements with at least 7 nocturnal measurements were excluded.

2.4. Definition of Terms

- For ABPM (Ambulatory Blood Pressure Monitoring), the thresholds set for confirming hypertension based on 24-hour averages were a blood pressure (BP) greater than or equal to 130 mmHg systolic and/or 80 mmHg diastolic.
- The "non-dipper" characteristic was defined as the absence of a nocturnal drop in blood pressure of at least 10% compared to daytime values, or a nocturnal rise in blood pressure.
- Pulse pressure (PP) is the difference between the mean systolic and diastolic blood pressures (not the average of the pulse pressures calculated at each measurement). A PP greater than or equal to 60 mmHg was considered pathological.
- Office blood pressure, or clinical blood pressure, is the average of the three

blood pressure measurements taken before the ABPM device was fitted. • Clinical hypertension (HTN) is defined as a blood pressure reading in the office greater than or equal to 140 mmHg systolic and/or 90 mmHg diastolic.

- Hypertension screening is indicated for individuals with no prior history of hypertension who have a blood pressure reading in the office less than 140 mmHg systolic and/or 90 mmHg diastolic, and who are also experiencing symptoms suggestive of hypertension.
- Hypertension diagnosis is indicated for individuals with no prior history of hypertension who have a blood pressure reading in the office greater than or equal to 140 mmHg systolic and/or 90 mmHg diastolic.
- Masked hypertension is defined as a blood pressure reading below 140/90 mmHg in the office and greater than or equal to 130/80 mmHg on ambulatory blood pressure monitoring (ABPM).
- White coat hypertension is defined as a blood pressure (BP) greater than or equal to 140/90 mmHg in the office and less than 130/80 mmHg on ambulatory blood pressure monitoring (ABPM).
- Isolated systolic hypertension is defined as a systolic BP greater than or equal to 140 mmHg and a diastolic BP < 90 mmHg.
- An elderly person is defined as someone 60 years of age or older [9].

Classifications of Blood Pressure and Hypertension

It is recommended to classify blood pressure as follows [10]:

- Optimal: BP less than 120/80 mmHg
- Normal: SBP between 120 - 129 mmHg and DBP between 80 - 84 mmHg
- High Normal: SBP between 130 - 139 mmHg and/or DBP between 85 - 89 mmHg
- Hypertension of:
  - Grade 1: SBP between 140 - 159 mmHg and/or DBP between 90 - 99 mmHg,
  - Grade 2: SBP between 160 - 179 mmHg and/or DBP between 100 - 109 mmHg,
  - Grade 3: SBP > 180 mmHg and/or DBP > 110 mmHg.

In 2024, the guidelines of the European Society of Cardiology recommends classifying blood pressure as non-elevated, elevated, and hypertension to facilitate treatment decisions [11]-[21]:

- For office blood pressure:
  - Non-elevated BP: when SBP < 120 mmHg and DBP < 70 mmHg,
  - Elevated BP: when SBP is between 120 - 139 mmHg and/or DBP is between 70 - 89 mmHg,
  - Hypertension: SBP > 140 mmHg and/or DBP > 90 mmHg.
- For ambulatory blood pressure monitoring (ABPM):
  - Non-elevated BP: SBP < 115 mmHg and DBP < 65 mmHg,
  - Elevated BP: SBP is between 115 - 129 mmHg and/or DBP is between 65 - 79 mmHg,

- Hypertension: SBP > 130 mmHg and/or DBP > 80 mmHg.

2.5. Data Collection and Analysis

For each patient, the parameters studied included sociodemographic data (age and sex), the indication for the procedure, history of hypertension, clinical blood pressure measurement, and ABPM data were recorded.

Data analysis has been done using IBM SPSS software and $p < 0.05$ as significance level.

2.6. Ethical Aspects

The study was conducted following the principles good clinical practice.

3. Results

Of the 289 ABPMs performed during the study period, 104 were for treatment (36%) and 185 were for screening and diagnosis (64%).

3.1. Study Population Characteristics (185 Patients) (Table 1)

The 30 - 44 age group was the most represented (40%), followed by the 45 - 59 age group (32%), with a mean age of 45 ± 14 years and a range of 19 to 95 years.

Male predominated (52%), with a male-to-female ratio of 1.08. The indication was for screening in 55 patients (30%) and for a diagnosis of hypertension in 130 patients (70%).

The mean 24-hour blood pressure was 131 ± 13 mmHg for systolic blood pressure and 82 ± 10 mmHg for diastolic blood pressure, with a mean heart rate of 81 ± 10 bpm.

The mean pulse pressure was 50 ± 7 mmHg and was abnormal in 11% of patients.

Office hypertension was noted in 130 patients (70%). It was grade 1, 2, and 3 in 61%, 30%, and 9% of patients, respectively, with a mean systolic blood pressure of 149 ± 14 mmHg and a mean diastolic blood pressure of 95 ± 9 mmHg.

All grade 3 hypertension cases in the office were confirmed by ambulatory blood pressure monitoring (ABPM).

Of the 55 patients with normal blood pressure in the office, ambulatory blood pressure monitoring (ABPM) confirmed the presence of hypertension in 14 patients, representing a proportion of masked hypertension (25%). Among the 130 patients with hypertension in the office, 22 had normal ABPM, representing a proportion of "white coat" hypertension (17%).

According to the European Society of Cardiology classification, blood pressure in the office was classified as normal in one patient (1%), elevated in 54 patients (29%), and hypertension in 130 patients (70%). ABPM was normal in 3 patients, elevated in 60 patients, and hypertension was detected in 122 patients (66%). Hypertensive population at ABPM: 122 patients (66%)

Of the 185 ABPMs performed for screening and diagnosis, 122 confirmed the

presence of hypertension, representing a proportion of 66%, both overall and for men and women. This proportion increased with age.

Table 1. Characteristics of the sample.

Characteristics		Total	Screening	Diagnostic
Number of ABPM n (%)		185 (64)	55 (30)	130 (70)
Male n (%)		97 (52)	29 (53)	68 (52)
Mean age (years)		45 ± 14	43 ± 16	46 ± 13
Age group(years) n (%)	18 - 29	20 (11)	11 (20)	9 (7)
	30 - 44	74 (40)	21 (38)	53 (41)
	45 - 59	60 (32)	14 (26)	46 (35)
	60 and more	31 (17)	9 (16)	22 (17)
Office blood pressure measures	Maen sBP** (mm Hg)	131 ± 13	127 ± 8	150 ± 14
	Maen dBP*** (mm Hg)	82 ± 10	80 ± 5	95 ± 9
	Optimal BP*	9 (5)	9 (16)	
	Normal BP	17 (9)	17 (31)	0
	High normal BP	29 (16)	29 (53)	0
	Hypertension grade I	80 (43)	0	80 (61)
	Hypertension grade II	39 (21)	0	39 (30)
	Hypertension grade III	11 (6)	0	11 (9)
Ambulatory blood pressure measures	24 hours Systolic blood pressure (mm Hg)	131 ± 13	121 ± 10	136 ± 12
	24 hours Diastolic blood pressure (mm Hg)	82 ± 10	74 ± 7	86 ± 8
	24 hours Heart rate (bpm)	81 ± 10	80 ± 10	81 ± 10
	24 hours Pulsed Pressure (mm Hg)	50 ± 7	47 ± 6	51 ± 8
	Pulsed pressure ≥ 60 mm Hg n (%)	20 (11)	3 (5)	17 (13)
	No-dipper n (%)	102 (55)	31 (56)	71 (55)

*BP: blood pressure **sBP: systolic blood pressure ***dBP: diastolic blood pressure.

3.2. Pressure Status by Age Group and Sex

In the 60+ age group, hypertension was more frequent in women than in men (92.3% vs. 61.1%) (Table 2).

Table 2. Distribution of pressure status by sex and age group.

Sex		Age group (years) n (%)					
		18 - 29	30 - 44	44 - 59	60 and more	Total	P
Male	**Hypertension**	**2 (33.3)**	**27 (67.5)**	**24 (72.7)**	**11 (61.1)**	64 (66)	0.290
	Normotension	4 (66.7)	13 (32.5)	9 (27.3)	7 (38.9)	33 (34)	
Female	**Hypertension**	**5 (35.7)**	**22 (64.7)**	**19 (70.4)**	**12 (92.3)**	58 (66)	**0.019**
	Normotension	9 (64.3)	12 (35.3)	8 (29.6)	1 (7.7)	30 (34)	
Total	**Hypertension**	**7 (35)**	**49 (66.2)**	**43 (71.7)**	**23 (74.2)**	122 (66)	**0.016**
	Normotension	13 (65)	25 (33.8)	17 (28.3)	8 (25.8)	63 (34)	

3.3. Study of Hypertensive Patients

The mean age of hypertensive patients was 47 ± 13 years, with a predominance of males. The 30 - 44 year (40%) and 45 - 59 year (35%) age groups were the most represented.

Hypertension was systolic-diastolic in 69%, isolated systolic in 10%, and isolated diastolic in 21% of patients. In more than half of the hypertensive patients (56%), the profile was non-dipper. Table 3 summarizes the characteristics of the hypertensive population.

Table 3. Characteristics of hypertensive patients.

Characteristics (n: 122)		
Mean age (years)		47 ± 13
Male n (%)		64 (52)
Age group (years) n (%)	18 - 29	7 (6)
	30 - 44	**49 (40)**
	45 - 59	**43 (35)**
	60 et Plus	23 (19)
Ambulatory blood pressure results	24 hours Systolic blood pressure (mm Hg)	138 ± 10
	24 hours Diastolic blood pressure (mm Hg)	89 ± 8
	24 hours Heart rate (bpm)	81 ± 10
	24 hours Pulsed Pressure (mm Hg)	51 ± 8
	Pulsed pressure ≥ 60 mm Hg n (%)	19 (16)
	No-dipper n (%)	**68 (56)**
	Systolic-diastolic hypertension n (%)	84 (69)
	Isolated systolic hypertension n (%)	12 (10)
	Isolated diastolic hypertension n (%)	26 (21)

3.4. Distribution of Pulsed Pressure by Pressure Status

Sixteen percent (16%) of the hypertensive patients had a pulse pressure greater than or equal to 60 mmHg. Pathological pulse pressure was more frequent in hypertensive patients than in normotensive patients (95% vs. 5%; p = 0.003) (Table 4).

Table 4. Distribution of pulsed pressure by hypertension status.

		HTN* n (%)		
		No	Yes	p-Value
Pulsed Pressure	Normal	62 (38)	103 (62)	**0.004**
	Elevated	**1 (5)**	**19 (95)**	

*HTN: hypertension.

3.5. Study of Pulsed Pressure and Systolic Hypertension by Age Group

Persons aged 60 years and older represented 60% of the patients with pathological pulse pressure and two-thirds of the patients with isolated systolic hypertension (Table 5).

Table 5. Distribution of isolated systolic hypertension and pulsed pressure by age group.

		Age group n (years)				
		18 - 29 (%)	30 - 44 (%)	44 - 59 (%)	60 et Plus (%)	p value
PP*	Normal	20 (12)	72 (44)	54 (33)	19 (11)	0.0001
	Elevated	**0 (0)**	**2 (10)**	**6 (30)**	**12 (60)**	
sHTN**	No	19 (11)	73 (42)	58 (34)	23 (13)	0.0001
	Yes	**1 (8)**	**1 (8)**	**2 (17)**	**8 (67)**	

*PP: Pulsed Pressure; **sHTN: systolic hypertension.

4. Discussion

4.1. Population Description

Hypertension is a predominantly asymptomatic condition, generally detected through routine or opportunistic screening in a medical setting. Ambulatory blood pressure monitoring (ABPM, or home blood pressure monitoring) is the preferred method for confirming cases of elevated blood pressure or hypertension in the office after ruling out a hypertensive emergency when the blood pressure is ≥180/110 mmHg [22] [23].

During the study period, we recorded 289 ABPMs, an average of 96 per year.

Ikama SM *et al.* [24] in Brazzaville reported 1040 ABPM recordings over 36 months.

In Mali, Traoré A *et al.* [8] recorded 588 ABPMs over a 7-year period, an average of 84 per year. This low rate of ABPM use in Mali can be explained, according to Traoré A *et al.* [4], by insufficient training of practicing physicians on the conditions of use of ABPM recording devices, indications, validation criteria, and, above all, the interpretation of ABPM data.

4.2. Hypertension Type Study

The mean age of our study population was 45 ± 14 years, with a male predominance (52%), close to that of Traoré A *et al.* [8], who reported a mean age of 47.8 years.

As in Arthur [25], diagnostic indications predominated, accounting for 70% of cases.

The proportion of "white coat" hypertension was 17% in our study.

In the literature, the prevalence of white coat hypertension varies across studies, with Arnjanapiboonwong A *et al.* [26] and Stergiou GS *et al.* [27] reporting 24% and 30%, respectively. Compared to individuals with normal blood pressure,

white coat hypertension is associated with an increased prevalence of dysmetabolic risk factors, asymptomatic organ damage, and an increased risk of developing type 2 diabetes and sustained hypertension, as well as an overall increased risk of cardiovascular events [28]-[31]. It was associated with a 38% and 20% increased risk of cardiovascular disease and all-cause mortality compared to individuals with normal blood pressure, respectively [32].

In our study, one in four individuals had masked hypertension (25%). The prevalence of masked hypertension ranges from 10% to 20% [27], and is higher in younger individuals, men, smokers, and those with high levels of physical activity, high alcohol consumption, anxiety, and occupational stress [33] [34]. It was 29% in the study by Arnjanapiboonwong A *et al.* [26].

Individuals with masked hypertension had significantly higher rates of cardiovascular events and all-cause mortality than normotensive individuals and patients with white coat hypertension, but lower rates of cardiovascular events than those with sustained hypertension [35].

The proportion of hypertension in our study was 66%, both overall and for men and women, higher than that reported by Fryar CD *et al.* in the United States, who found a prevalence of hypertension of 47.7% (50.8% in men versus 44.6% in women) [36].

This high proportion of hypertension in our study could be explained by:

- The recruitment method, which targeted patients with elevated blood pressure and/or symptoms suggestive of hypertension,
- A real increase in prevalence due to lifestyle changes.

In our study, the proportion of hypertension increased with age. Fryar CD *et al.* [36] made the same observation. This relationship is explained in particular by increased arterial stiffness with aging and the broadening of pulse pressure.

The mean age of our hypertensive patients was 47 ± 13 years, with a male predominance. In both the general and hypertensive populations, the 30 - 44 and 45 - 59 age groups were the most represented. The predominance of the younger population in our study can be explained by the fact that it represents a potentially active group. Indeed, analysis of consumption patterns and earned income in Mali indicates that people aged 27 to 62 generate an economic surplus [37], thus enabling them to access care in the private healthcare facilities that constituted the setting of our study. As for the male predominance, it could be due to the fact that in Mali, women are more affected by the unemployment rate than men (15.2% versus 4%) [38], which constitutes a barrier to accessing care in private health facilities.

In individuals aged 60 and over, hypertension was more common in women than in men. Attias D *et al.* noted that in women, compared to men, hypertension is less common before age 65, but more common after age 65 [39]. The prevalence of hypertension tends to be lower in premenopausal women than in men of the same age, with a marked increase in postmenopausal women [40]. In premenopausal women, estrogen contributes to lower blood pressure in the context of its

overall vascular protective effect. After menopause, the sharp decline in estrogen levels partly explains why blood pressure and the risk of hypertension increase [41] [42].

In our study, isolated systolic hypertension represented 10% of the hypertensive population. Two out of three patients with isolated systolic hypertension were aged 60 and over. Isolated systolic hypertension is the most common form of hypertension in elderly patients; more than 80% of untreated hypertensive patients over 60 years of age have isolated systolic hypertension [43].

Fifty-six percent (56%) of the hypertensive patients in our study had a non-dipper profile. The absence of nocturnal blood pressure reduction is correlated with an increased cardiovascular risk, more left ventricular hypertrophy, cerebral lacunae detected by MRI, microalbuminuria in diabetic patients, and a decline in renal function in chronic nephropathy [44]. The lack of paraclinical data in our study was an obstacle to prognostic evaluation.

Sixteen percent (16%) of the hypertensive patients had a pulse pressure greater than or equal to 60 mmHg. Pathological pulse pressure was more frequent in hypertensive patients than in normotensive patients. Individuals aged 60 and over represented 60% of patients with abnormal pulse pressure.

Some studies have shown that in older adults, a pulse pressure greater than 65 mmHg may be an independent risk factor for cardiovascular morbidity and mortality [45].

Our study has some limitations:

- The small size of our sample,
- The absence of biological and imaging data.

5. Conclusions

Hypertension is common, and its prevalence increases with age.

Despite the availability of ambulatory blood pressure monitoring (ABPM), it is less frequently prescribed in daily practice.

Masked hypertension is described in one in five individuals, and white coat hypertension is found in one in six.

The profile was non-dipper in more than half of hypertensive patients.

More than three out of five individuals with abnormal pulse pressure and isolated systolic hypertension were aged 60 and over.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] William, J., *et al.* (2024) Lignes directrices pour la prise en charge de l'hypertension artérielle et de l'hypertension: Développées par le groupe de travail sur la prise en charge de l'hypertension artérielle et de l'hypertension de la Société européenne de cardiologie et approuvées par la Société européenne d'endocrinologie et l'Organisation européenne des accidents vasculaires cérébraux. *European Heart Journal*, **45**, 3912-

4018.

[2] Schoenthaler, A.M., Lancaster, K.J., Chaplin, W., Butler, M., Forsyth, J. and Ogedegbe, G. (2018) Cluster Randomized Clinical Trial of FAITH (Faith-Based Approaches in the Treatment of Hypertension) in Blacks. *Circulation*: *Cardiovascular Quality and Outcomes*, **11**, e004691. https://doi.org/10.1161/circoutcomes.118.004691

[3] Beaney, T., Schutte, A.E., Stergiou, G.S., Borghi, C., Burger, D., Charchar, F., *et al.* (2020) May Measurement Month 2019: The Global Blood Pressure Screening Campaign of the International Society of Hypertension. *Hypertension*, **76**, 333-341. https://doi.org/10.1161/hypertensionaha.120.14874

[4] Victor, R.G., Lynch, K., Li, N., Blyler, C., Muhammad, E., Handler, J., *et al.* (2018) A Cluster-Randomized Trial of Blood-Pressure Reduction in Black Barbershops. *New England Journal of Medicine*, **378**, 1291-1301. https://doi.org/10.1056/nejmoa1717250

[5] Sun, Y., Mu, J., Wang, D.W., Ouyang, N., Xing, L., Guo, X., *et al.* (2022) A Village Doctor-Led Multifaceted Intervention for Blood Pressure Control in Rural China: An Open, Cluster Randomised Trial. *The Lancet*, **399**, 1964-1975. https://doi.org/10.1016/s0140-6736(22)00325-7

[6] Gobin, N., Wuerzener, G., Waeber, B. and Burnier, M. (2012) Mesure ambulatoire de la pression artérielle sur 24 heures. *Forum Médical Suisse-Swiss Medical Forum*, **12**, 600-607. https://doi.org/10.4414/fms.2012.01093

[7] Traoré, A., *et al.* (2023) Niveau de Connaissance du Personnel Soignant sur la MAPA (Mesure Ambulatoire de la Pression Artérielle) dans le District de Bamako/Mali. *Recherche sur la Santé en Afrique*, **1**, 88-91.

[8] Alhadji, T., *et al.* (2025) Évaluation rétrospective des pratiques de surveillance ambulatoire de la pression artérielle (MAPA) à Bamako de janvier 2017 à octobre 2024: Évaluation rétrospective des pratiques de la mesure ambulatoire de la pression artérielle à bamako entre janvier 2017 et octobre 2024. *Health Sciences and Disease*, **26**, 32-35.

[9] Kowal, P. (2025) Definition of an Older Person. Proposed Working Definition of an Older Person in Africa for the MDS Project. World Health Organization.

[10] Mancia, G., Kreutz, R., Brunström, M., Burnier, M., Grassi, G., Januszewicz, A., *et al.* (2023) 2023 ESH Guidelines for the Management of Arterial Hypertension the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension: The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension Endorsed by the European Renal Association (ERA) and the International Society of Hypertension (ISH). *Journal of Hypertension*, **41**, 1874-2071. https://doi.org/10.1097/hjh.0000000000003480

[11] Rahimi, K., Bidel, Z., Nazarzadeh, M., Copland, E., Canoy, D., Ramakrishnan, R., *et al.* (2021) Pharmacological Blood Pressure Lowering for Primary and Secondary Prevention of Cardiovascular Disease across Different Levels of Blood Pressure: An Individual Participant-Level Data Meta-Analysis. *The Lancet*, **397**, 1625-1636. https://doi.org/10.1016/s0140-6736(21)00590-0

[12] Sundström, J., Arima, H., Jackson, R., Turnbull, F., Rahimi, K., Chalmers, J., *et al.* (2015) Effects of Blood Pressure Reduction in Mild Hypertension: A Systematic Review and Meta-Analysis. *Annals of Internal Medicine*, **162**, 184-191. https://doi.org/10.7326/m14-0773

[13] Ettehad, D., Emdin, C.A., Kiran, A., Anderson, S.G., Callender, T., Emberson, J., *et al.* (2016) Blood Pressure Lowering for Prevention of Cardiovascular Disease and Death: A Systematic Review and Meta-Analysis. *The Lancet*, **387**, 957-967.

https://doi.org/10.1016/s0140-6736(15)01225-8

[14] Rahimi, K., Bidel, Z., Nazarzadeh, M., Copland, E., Canoy, D., Wamil, M., *et al.* (2021) Age-Stratified and Blood-Pressure-Stratified Effects of Blood-Pressure-Lowering Pharmacotherapy for the Prevention of Cardiovascular Disease and Death: An Individual Participant-Level Data Meta-Analysis. *The Lancet*, **398**, 1053-1064. https://doi.org/10.1016/s0140-6736(21)01921-8

[15] Brunström, M. and Carlberg, B. (2018) Association of Blood Pressure Lowering with Mortality and Cardiovascular Disease across Blood Pressure Levels: A Systematic Review and Meta-Analysis. *JAMA Internal Medicine*, **178**, 28-36. https://doi.org/10.1001/jamainternmed.2017.6015

[16] Arguedas, J.A., Leiva, V. and Wright, J.M. (2020) Blood Pressure Targets in Adults with Hypertension. *Cochrane Database of Systematic Reviews*, No. 12, CD004349. https://doi.org/10.1002/14651858.cd004349.pub3

[17] Saiz, L.C., Gorricho, J., Garjón, J., Celaya, M.C., Erviti, J. and Leache, L. (2022) Blood Pressure Targets for the Treatment of People with Hypertension and Cardiovascular Disease. *Cochrane Database of Systematic Reviews*, No. 11, CD010315. https://doi.org/10.1002/14651858.cd010315.pub5

[18] Wright, J.T., *et al.* (2015) A Randomized Trial of Intensive versus Standard Blood-Pressure Control. *New England Journal of Medicine*, **373**, 2103-2116. https://doi.org/10.1056/nejmoa1511939

[19] Zhang, W., Zhang, S., Deng, Y., Wu, S., Ren, J., Sun, G., *et al.* (2021) Trial of Intensive Blood-Pressure Control in Older Patients with Hypertension. *New England Journal of Medicine*, **385**, 1268-1279. https://doi.org/10.1056/nejmoa2111437

[20] Cushman, W.C., *et al.* (2010) Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus. *The New England Journal of Medicine*, **362**, 1575-1585.

[21] Ferrucci, L., Furberg, C.D., Penninx, B.W.J.H., DiBari, M., Williamson, J.D., Guralnik, J.M., *et al.* (2001) Treatment of Isolated Systolic Hypertension Is Most Effective in Older Patients with High-Risk Profile. *Circulation*, **104**, 1923-1926. https://doi.org/10.1161/hc4101.097520

[22] Xu, W., Goldberg, S.I., Shubina, M. and Turchin, A. (2015) Optimal Systolic Blood Pressure Target, Time to Intensification, and Time to Follow-Up in Treatment of Hypertension: Population Based Retrospective Cohort Study. *BMJ*, **350**, h158-h158. https://doi.org/10.1136/bmj.h158

[23] van den Born, B.H., Lip, G.Y.H., Brguljan-Hitij, J., Cremer, A., Segura, J., Morales, E., *et al.* (2019) ESC Council on Hypertension Position Document on the Management of Hypertensive Emergencies. *European Heart Journal-Cardiovascular Pharmacotherapy*, **5**, 37-46. https://doi.org/10.1093/ehjcvp/pvy032

[24] Ikama, S.M., *et al.* (2015) Pratique de la mesure ambulatoire de la pression artérielle à Brazzaville (Congo): Données préliminaires. *Pan African Medical Journal*, **20**, Article 353.

[25] de La Ruë de Can, A. (2019) Apport de la mesure ambulatoire de la pression artérielle en médecine Générale. Thèse de doctorat, Université Grenoble Alpes.

[26] Arnjanapiboonwong, A., *et al.* (2020) Performance diagnostique des mesures de la pression artérielle en clinique et à domicile comparées à celles effectuées en ambulatoire: Revue systématique et méta-analyse. *BMC Cardiovascular Disorders*, 491.

[27] Stergiou, G.S., Palatini, P., Parati, G., O'Brien, E., Januszewicz, A., Lurbe, E., *et al.* (2021) 2021 European Society of Hypertension Practice Guidelines for Office and Out-of-Office Blood Pressure Measurement. *Journal of Hypertension*, **39**, 1293-1302.

https://doi.org/10.1097/hjh.0000000000002843

[28] Banegas, J.R., Ruilope, L.M., de la Sierra, A., Vinyoles, E., Gorostidi, M., de la Cruz, J.J., *et al.* (2018) Relationship between Clinic and Ambulatory Blood-Pressure Measurements and Mortality. *New England Journal of Medicine*, **378**, 1509-1520. https://doi.org/10.1056/nejmoa1712231

[29] Cuspidi, C., Rescaldani, M., Tadic, M., Sala, C., Grassi, G. and Mancia, G. (2015) White-Coat Hypertension, as Defined by Ambulatory Blood Pressure Monitoring, and Subclinical Cardiac Organ Damage: Ameta-Analysis. *Journal of Hypertension*, **33**, 24-32. https://doi.org/10.1097/hjh.0000000000000416

[30] Mancia, G., Bombelli, M., Facchetti, R., Madotto, F., Quarti-Trevano, F., Grassi, G., *et al.* (2009) Increased Long-Term Risk of New-Onset Diabetes Mellitus in White-Coat and Masked Hypertension. *Journal of Hypertension*, **27**, 1672-1678. https://doi.org/10.1097/hjh.0b013e32832be5f9

[31] Tientcheu, D., Ayers, C., Das, S.R., McGuire, D.K., de Lemos, J.A., Khera, A., *et al.* (2015) Target Organ Complications and Cardiovascular Events Associated with Masked Hypertension and White-Coat Hypertension. *Journal of the American College of Cardiology*, **66**, 2159-2169. https://doi.org/10.1016/j.jacc.2015.09.007

[32] Huang, Y., Huang, W., Mai, W., Cai, X., An, D., Liu, Z., *et al.* (2017) White-Coat Hypertension Is a Risk Factor for Cardiovascular Diseases and Total Mortality. *Journal of Hypertension*, **35**, 677-688. https://doi.org/10.1097/hjh.0000000000001226

[33] Hung, M., Shih, L., Wang, Y., Leu, H., Huang, P., Wu, T., *et al.* (2021) Prediction of Masked Hypertension and Masked Uncontrolled Hypertension Using Machine Learning. *Frontiers in Cardiovascular Medicine*, **8**, Article ID: 778306. https://doi.org/10.3389/fcvm.2021.778306

[34] Shimbo, D., Abdalla, M., Falzon, L., Townsend, R.R. and Muntner, P. (2016) Studies Comparing Ambulatory Blood Pressure and Home Blood Pressure on Cardiovascular Disease and Mortality Outcomes: A Systematic Review. *Journal of the American Society of Hypertension*, **10**, 224-234.e17. https://doi.org/10.1016/j.jash.2015.12.013

[35] Palla, M., Saber, H., Konda, S. and Briasoulis, A. (2018) Masked Hypertension and Cardiovascular Outcomes: An Updated Systematic Review and Meta-Analysis. *Integrated Blood Pressure Control*, **11**, 11-24. https://doi.org/10.2147/ibpc.s128947

[36] Fryar, C.D., Kit, B., Joseph Afful, M.S., *et al.* (2024) Prévalence, sensibilisation, traitement et contrôle de l'hypertension chez les adultes de 18 ans et plus: États-Unis, août 2021-août 2023. Centre National des Statistiques de Santé (États-Unis). https://www.ncbi.nlm.nih.gov/books/NBK612761/

[37] République du Mali (2016) Rapport national sur le profil du dividende démographique au Mali en 2015. https://ouest.rnddi.creg-center.org/wp-content/uploads/2022/08/MALI-Policy_1_Synthese-DD.pdf

[38] Enquête Modulaire et Permanente (EMOP) Auprès des ménages au Mali: Accessibilité aux soins de santé, appréciation de la population sur les actions prioritaires à entreprendre et dépenses de consommation des ménages. Rapport d'analyse du second passage. https://www.instat-mali.org/laravel-filemanager/files/shares/eq/rana25pas2_eq.pdf

[39] Attias, D., Pezel, T. and Lellouche, N. (2024) IKB cardiologie vasculaire EDN. 9ème Édition, Vernazobres Grego, 32.

[40] Picone, D.S., Deshpande, R.A., Schultz, M.G., Fonseca, R., Campbell, N.R.C., Delles, C., *et al.* (2020) Nonvalidated Home Blood Pressure Devices Dominate the Online Marketplace in Australia: Major Implications for Cardiovascular Risk Management.

Hypertension, **75**, 1593-1599. https://doi.org/10.1161/hypertensionaha.120.14719

[41] Mauck, G.W., Smith, C.R., Geddes, L.A. and Bourland, J.D. (1980) The Meaning of the Point of Maximum Oscillations in Cuff Pressure in the Indirect Measurement of Blood Pressure—Part II. *Journal of Biomechanical Engineering*, **102**, 28-33. https://doi.org/10.1115/1.3138195

[42] Sandset, E.C., Anderson, C.S., Bath, P.M., Christensen, H., Fischer, U., Gąsecki, D., *et al.* (2021) European Stroke Organisation (ESO) Guidelines on Blood Pressure Management in Acute Ischaemic Stroke and Intracerebral Haemorrhage. *European Stroke Journal*, **6**, 48-89. https://doi.org/10.1177/23969873211012133

[43] Franklin, S.S., Jacobs, M.J., Wong, N.D., L'Italien, G.J. and Lapuerta, P. (2001) Predominance of Isolated Systolic Hypertension among Middle-Aged and Elderly US Hypertensives: Analysis Based on National Health and Nutrition Examination Survey (NHANES) III. *Hypertension*, **37**, 869-874. https://doi.org/10.1161/01.hyp.37.3.869

[44] Agarwal, R. and Andersen, M.J. (2006) Prognostic Importance of Ambulatory Blood Pressure Recordings in Patients with Chronic Kidney Disease. *Kidney International*, **69**, 1175-1180. https://doi.org/10.1038/sj.ki.5000247

[45] Persu, A., Touzé, E., Mousseaux, E., Barral, X., Joffre, F. and Plouin, P. (2011) Diagnosis and Management of Fibromuscular Dysplasia: An Expert Consensus: An Expert Consensus. *European Journal of Clinical Investigation*, **42**, 338-347. https://doi.org/10.1111/j.1365-2362.2011.02577.x