

The need to consider the blood pressure circadian rhythm by ambulatory monitoring to improve cardiovascular prognosis at Mbour Hospital, Senegal.

Ibrahima M. KEITA^{1-2*}, Mamadou DIOP³, Tafsir M. THIAM³, Coumba N. DIOUF³, Abdou K. SOW², Abdoulaye SAMB², Mohamed M.C.B.O. LEYE³ and Abdoulaye BA².

¹Ministry of Health and Social Action, Directorate General of Public Health (Senegal), ²University Cheikh Anta DIOP of Dakar, Biomedical sciences and Functional explorations Department, Laboratory of Human physiology (Senegal) and ³Mbour Hospital, Cardiology and Internal Medicine Department (Senegal).

HIGHLIGHTS: (i) Circadian rhythm of BP (CRBP) loss's linked to masked hypertension, hence the ABPM need ; (ii) ARBsII, beta-blockers and diuretics restore better disrupted CRBP ; (iii) The people with dyslipidaemia are more likely to lose their CRBP ; (iv) It seems that living in urban area increases BPCR disruption



1- BACKGROUND

Located in the Senegalese small coast (Figure 1), Mbour District hosts a single departmental public hospital offering cardiological & internal medicine healthcare services where ABPM's 2023 activity review showed a prevalence of 80% loss of CRBP, seen in Figure 2.

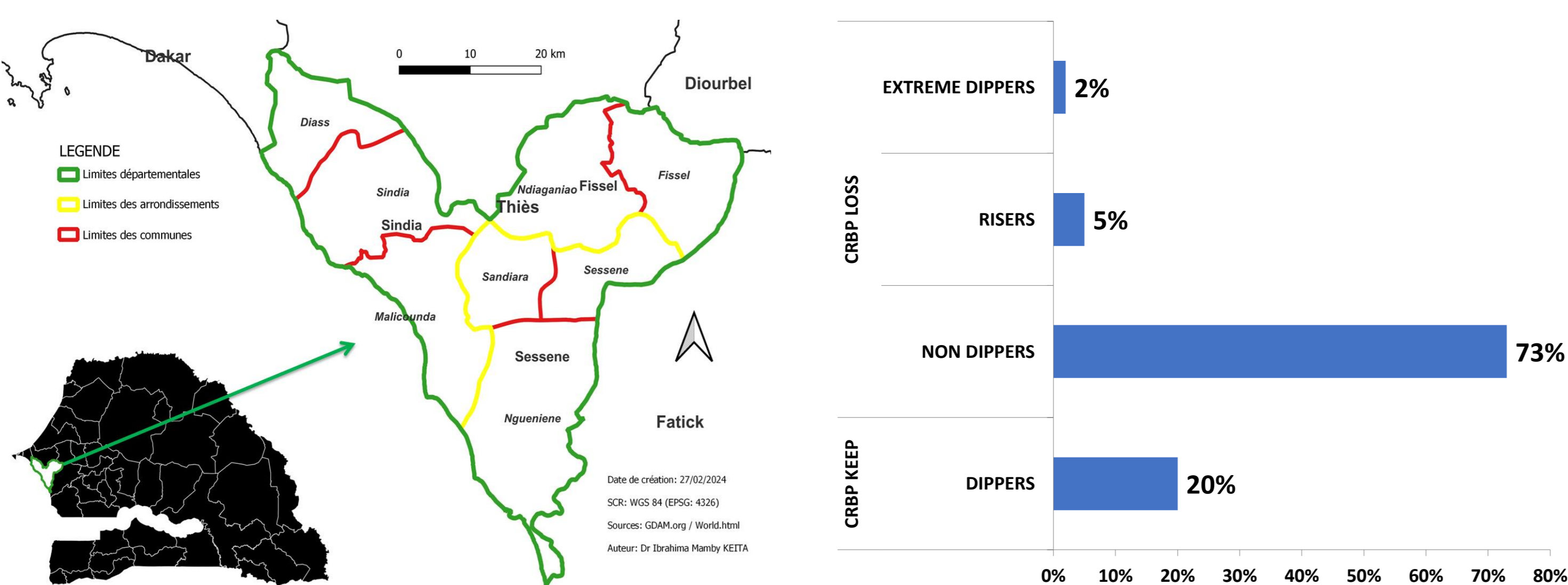


Fig 1: Mbour District location and division in 2024. Fig 2: ABPM's 2023 activity review: Various profiles.

However, the loss of this CRBP is associated with a silent and poor cardiovascular prognosis, making it a real public health issue. Hence the interest, in order to prevent this prognosis, in studying the determining factors of this CRBP loss at Mbour Hospital in 2024.

2- METHODS

- ❖ **Study Type:** Observational (Cross-sectional / Retrospective / Analytical)
- ❖ **Study Period:** From January, The 1st 2021 to December, The 31st 2022
- ❖ **Study Data management:** It consisted of:
 - **Data collection and entry:** Document reviews, Registers and Data base exploitation among 135 patients benefiting from a valid ABPM
 - **Data analysis:** First, a descriptive analysis using Excel® Software ; Then factors spatilization if necessary in QGIS® Software ; Last but not least, multiple binary logistic regressions with STATA® Software
 - **Results presentation:** Tables and Graphics (Diagrams and Maps)
- ❖ **Ethical Considerations:** Confidentiality and Anonymity Compliance, such as Mbour Hospital Leaders Authorizations was previously obtained

3- RESULTS

CRBP Loss prevalence (79.26%) includes 91.59% & 6.54% of “Non Dippers” and “Risers” (Figure 3).

Mean age was 55.59 ±12.27 years with a 60 years range, [23-83] with 55.55% & 42.22% belongs to 30-60 & Over 60 age group. The sex ratio was of 4 men for 5 women.

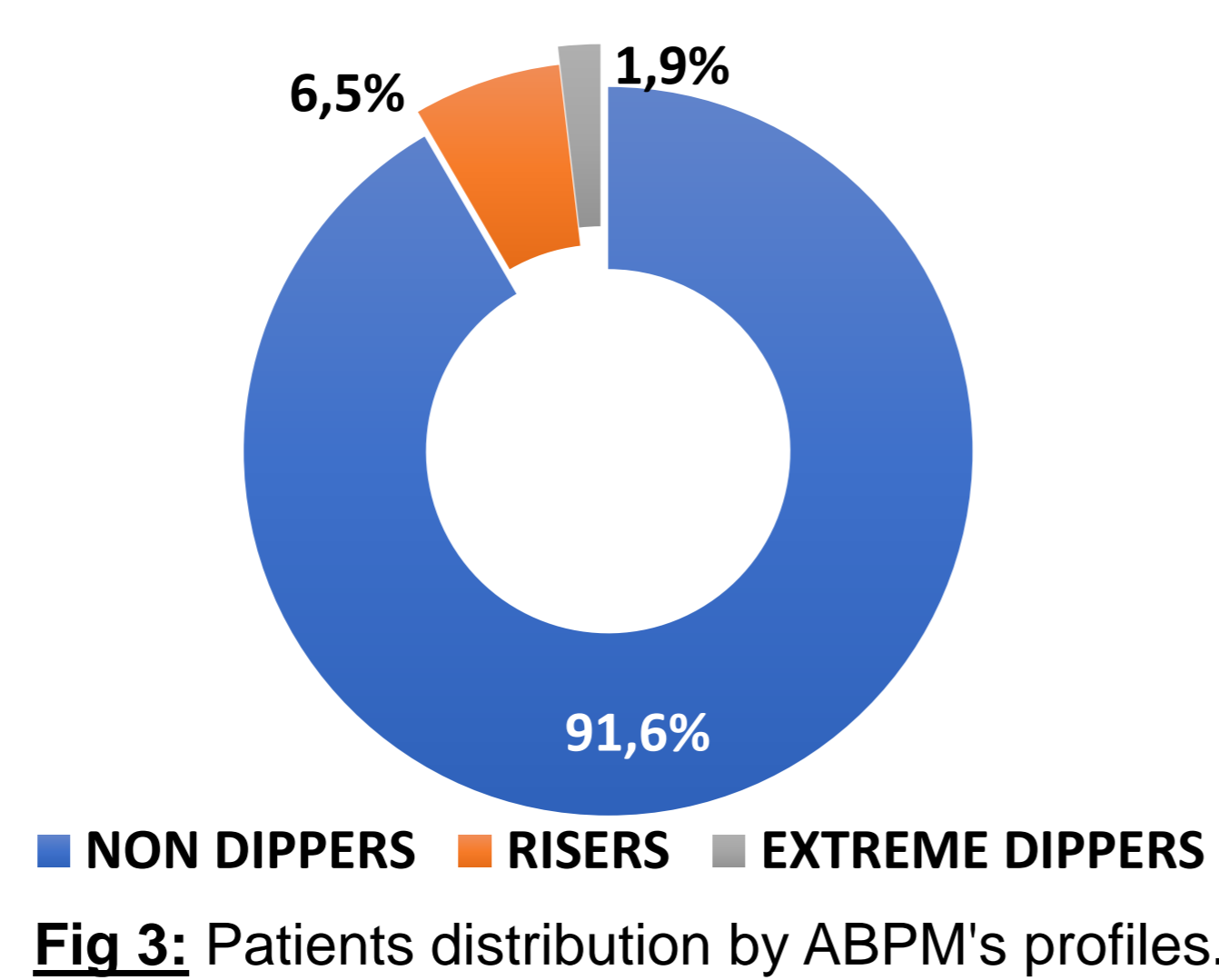


Fig 3: Patients distribution by ABPM's profiles.

Pathologically, overweight or obesity was more prevalent (54.13%), followed by hypertension (48.88%), then dyslipidemia (31.06%) & diabetes (22.55%), compare to stroke (2.85%), as noted in Figure 4

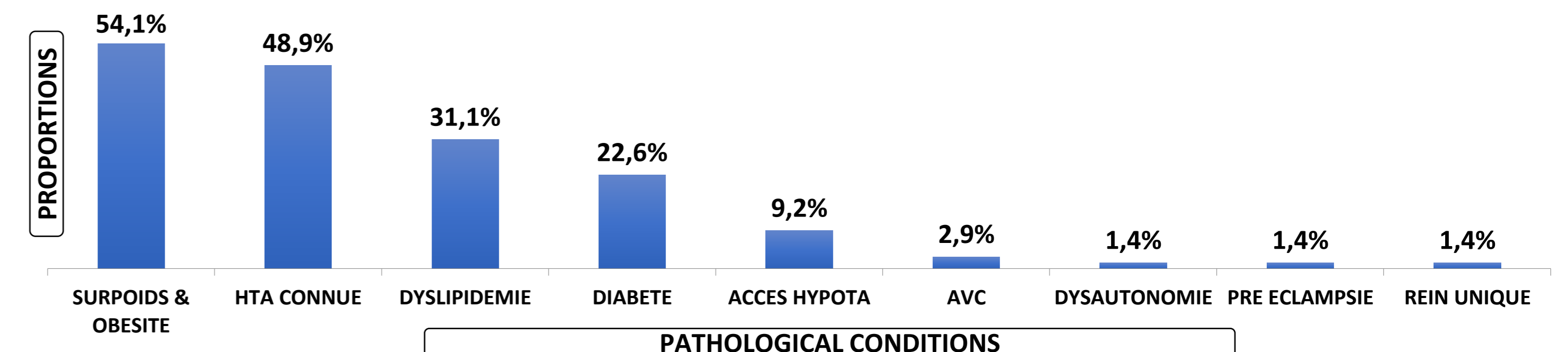


Fig 4: Prevalence of pathological conditions among patients followed-up in Mbour Hospital, 2021-2022.

The majority (97.03%) were from Mbour (Figure 5), with 80.74% from urban areas where greater CRBP loss was recorded, Figure 6

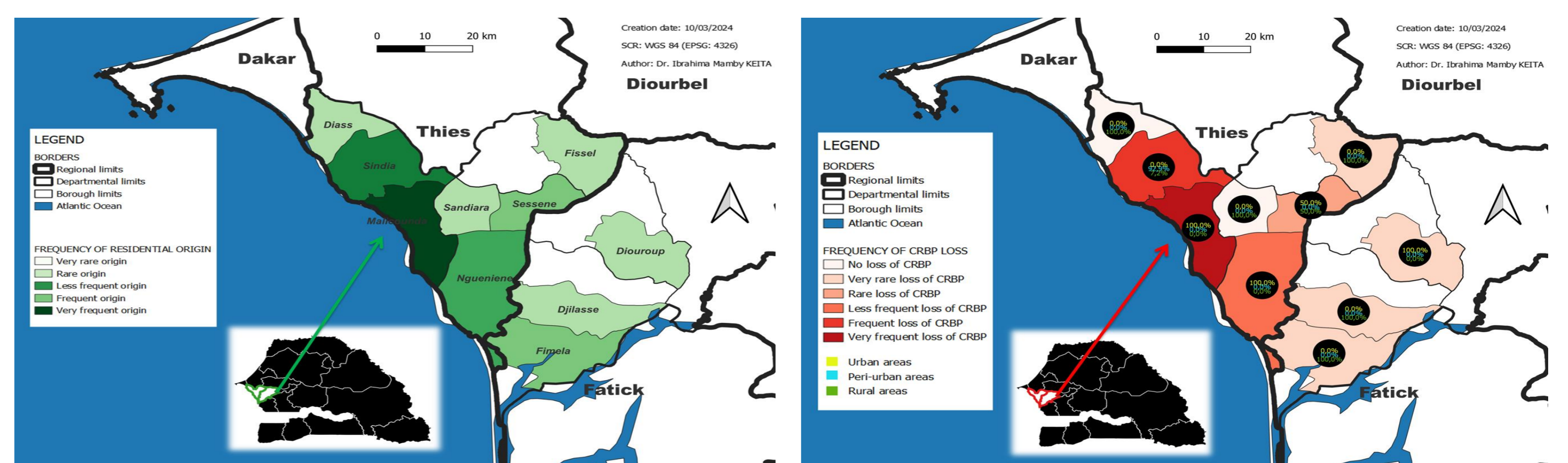


Fig 5: Patients distribution by residence of origin. Fig 6: Urbanization level and CRBP loss correlation

Sedentary lifestyles and smoking were prevalent in 49.62% and 10.52%. Only 40% and 51.85% had access to financial coverage and ABPM diagnostic. The later was about evident hypertension (48.14%) followed by masked hypertension (41.48%) compare to labile hypertension (3.70%) and “white coat effect” (4.44%). The most commonly used drugs were CCBs (67.69%) & CEIs (63.07%) opposed to ARBs II (6.15%), BBs (13.84%) and diuretics, which was statistically significant with other factors, as seen below (Table I).

Tab I: Healthcare system determinants associated with CRBP loss in Mbour Hospital, 2021-2022.

Independent variables	p	Valeur	OR	OR Adjusted	[CI: Min - Max]
Biological/Genetic Determinants					
Sex	0.262	5.9764	[0.2635 - 135.5252]		
Age	0.551	0.3258	[0.0081 - 12.9534]		
Overweight and obesity	***0.001	3.93e-11	[3.46e-17 - 0.44e-4]		
Dyslipidemia	***0.000	5.93e-6	[1.49e-3 - 2.35e-10]		
Environmental Determinants					
Municipality of residence	***0.003	1.53e-2	[5.4069 - 4.33e-3]		
Behavioural Determinants					
Sedentary lifestyle	0.811	1.3298	[0.1293 - 13.6676]		
Smoking	***0.003	2.23e-27	[3.70e-45 - 1.34e-9]		
Healthcare Determinants (1/2)					
24-Hours MBP	***0.001	1.58e-5	[149.3658 - 1.67e-8]		
Active MBP	***0.001	1.13e-10	[1.09e-16 - 1.18e-4]		
Healthcare Determinants (2/2)					
Resting MBP	***0.003	1.74e-15	[1.75e-15 - 1.72e-25]		
SBP Average	0.086	35.5992	[0.6066 - 2.08e+3]		
DBP Average	***0.005	1.64e-9	[3.23e-12 - 8.24e-3]		
Pulsed pressure	***0.020	1.43e-5	[1.20e-9 - 1.70e-1]		
Masked hypertension	***0.038	917.17	[1.4500 - 5.80e+5]		
Hypotensive episodes	***0.002	2.93e-4	[46.037 - 1.87e+07]		
Diuretics	***0.013	2.62e-3	[2.38e-5 - 0.2905]		
BBs	***0.002	1.31e-9	[4.23e-15 - 4.03e-3]		
ARBs II	***0.002	2.54e-13	[1.84e-21 - 3.52e-5]		
Financing (Third part)	***0.003	3.67e-6	[1.93e-2 - 6.98e-10]		
Constant		0.126	7.66e+4	[7.90e-8 - 7.4451]	

4- CONCLUSION

This work gave a prognostic value of taking the CRBP into account.

*CORRESPONDING AUTHOR: IM. KEITA, MD MPH-MSc (+221) 77 697 09 80 / 76 697 09 80, kibrahimamby@gmail.com

