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IS THERE A NEED TO ACCESS CARDIOVASCULAR CARE IN NIGER ?

PROF TOURE ALI IBRAHIM MD ,FESC,FESC

PREVALENCE OF CARDIOVASCULAR RISK FACTORS AND AVAILABILITY AND QUALITY OF ESSENTIAL MEDICINES AND BASIC EQUIPMENTS TO FIGHT AGAINST CARDIOVASCULAR DISEASES IN PRIMARY HEALTH CENTERS NIGER

Prospective cross sectional Study about 50 Primary Health Centers

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INTRODUCTION (1/4)

- Non-communicable diseases (NCD) ➡ biggest challenges of 21st Century
- Cardiovascular diseases (CVD) ➡ **46%** of NCD
- WHO : CVD ➡ **17,5 millions deaths in 2012**

➡ **1st cause of deaths in the world**

- CVD ⟹ {} heart and bloods vessels diseases
- CVD etiology ⟹ +++ ➡ **Atherosclerosis**

INTRODUCTION (2/4)

- CVD Risk factor :

Major	Predisposing
Smoking	Obesity : (CBI ≥ 30 kg/m^2)
High Blood Pressure	Inactivity
Dyslipidemia	CV family history
Type 2 Diabetes	Early Strokes (before 45 year old)
Age: ♂ ≥ 50 years ♀ ≥ 60 years	Menopause

Discussed

↗ of triglycerides, lipoproteins LDL, genetics and infectious factors, elevation of homocystein…

INTRODUCTION (3/4)

- Prevention of CVD:
  - ↘ overweight;
  - Balanced diet
  - ↗ fruits and vegetables;
  - Less than 300 mg/day of cholesterol;
  - ↘ salts and alcohol
  - Regular physical exercise

INTRODUCTION (4/4)

- WHO (2011) ⟹ 2013-2020 Action Plan ➡ ↘25% NCD in 2025
- Action Plan ➡ 9 targets ⟹ 4 (CVD):

  - Availability 80% of EM
  - 50% patients ⟹ appropriate treatment
  - ↘ 25% HBP prevalence in 2025
  - Stop or ↘ diabetes and overweight

- NIGER : +++ Studies on CVD

- ***No specific study ➡ availability of essential medicines against Cardiovascular diseases in Primary Health Centers***

GENERAL GOAL

Contribute to our knowledge of the epidemiological aspects of CVRF and medico-sanitary characteristics and management of CVD and their risk factors in Niger's Primary Health Centers.

SPECIFIC GOALS

- **Prevalence of epidemiologic aspects of CV Risk factors**
- **Knowledge of health and medical coverage aspect for management of CVD and CV Risk factors;**
- **Knowledge of distribution of information related to directives and guidelines of management of CVD and CV Risk factors in Primary Health Centers (PHC);**
- **Knowledge of the availability basic equipments in PHC for the follow-up of patients with CV Risk factors;**
- **Knowledge of the availability of Essential Medicines for management of CVD and CV Risk factors in PHC .**

METHODOLOGY

Definition of concepts

- **The STEPS approach :** It is a sequential process in 3 steps that begins with :
  - by collecting data on key health behaviors using questionnaires (Step 1),
  - then proceed to simple physical measurements (Step 2)
  - and then only to the collection of blood samples for biochemical evaluation (Step 3).

Ethical Aspect:

An application for authorization was sent to the Ethics Committee. We ensured the confidentiality of the information collected and the anonymity of the results when they were published. In addition, informed consent was required for each willing respondent.

METHODOLOGY

Caracteristics of the study :

It's a tranversal study which was hold in many areas in Niger. The duration was on two months, from May 1st to June 30th.

The population was men and women from 15 to 85 years old. A total of 13,469 adults participated in the Niger CVRFs survey.

The overall response rate was 92.3%.

The survey used a questionnaire (such as the standard questionnaire for the WHO STEPS approach), adapted to the national context.

- ✓ The biological check-up: patients over 40 years, hypertensive and / or diabetic known.
- ✓ Interviewed subjects with anomalies received appropriate care and / or advice.

METHODOLOGY

Inclusion criterias

Were selected for the study, anyone aged from 15 to 85 years old, who agreed on having interrogations, physical examination and biological samples picks.

Non inclusion criterias

Were excluded :

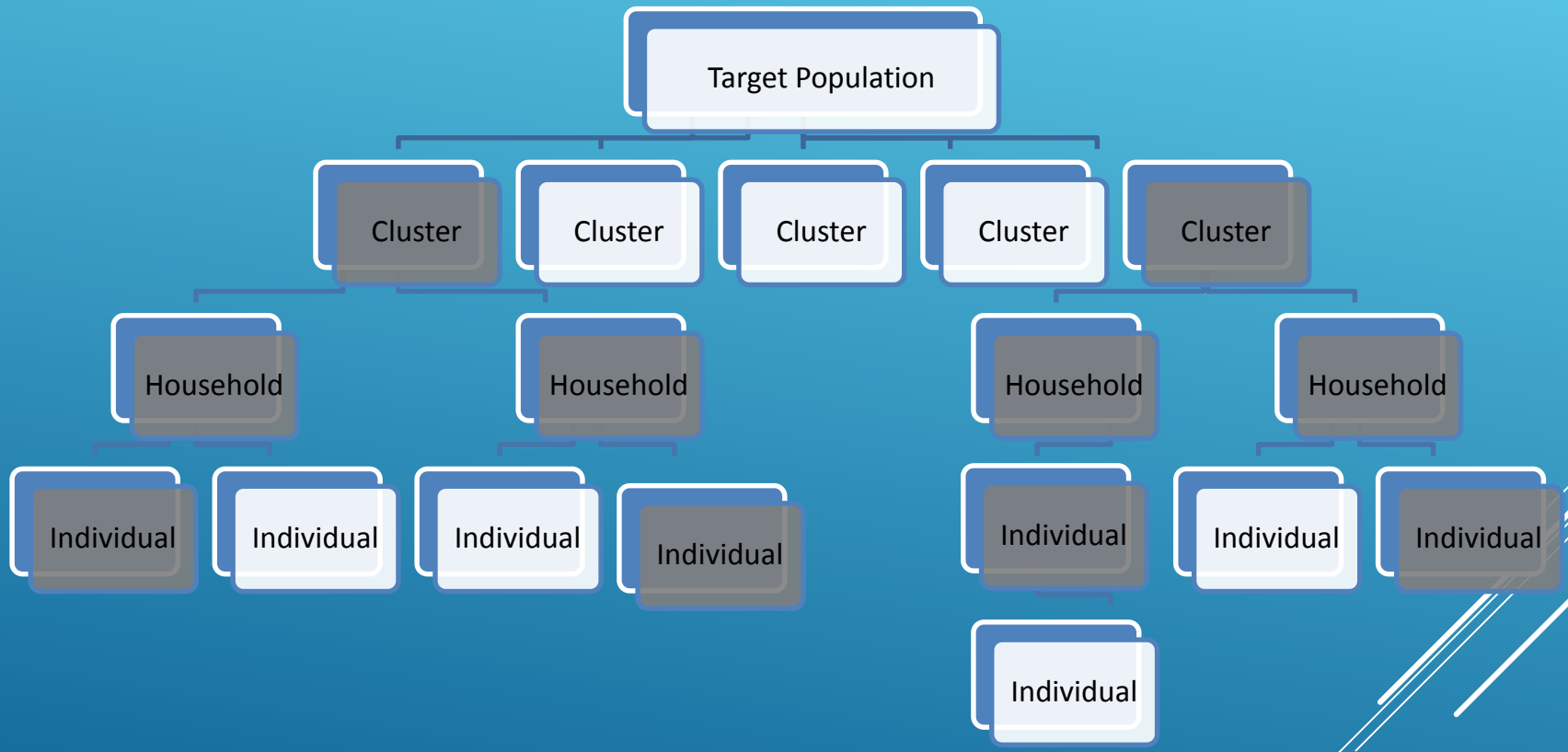
- Pregnant women
- Disabled people
- People who didn't agree with the study

Data processing and analysis

The collected data were entered in the Pro CS software. The clearance, tabulation and analysis were done on SPSS and STATA

METHODOLOGY

Survey design



NB: The clusters (islets) and individuals drawn by lot are gray.

METHODOLOGY (12)

- **Caracteristic of the study : Took place in all the country except Diffa's area.**

  It's a prospective, descriptive and transversal study hold from Mai to June 2017

- **Data collection:**

  - **Fact sheet**

- **Non inclusion criteria:**

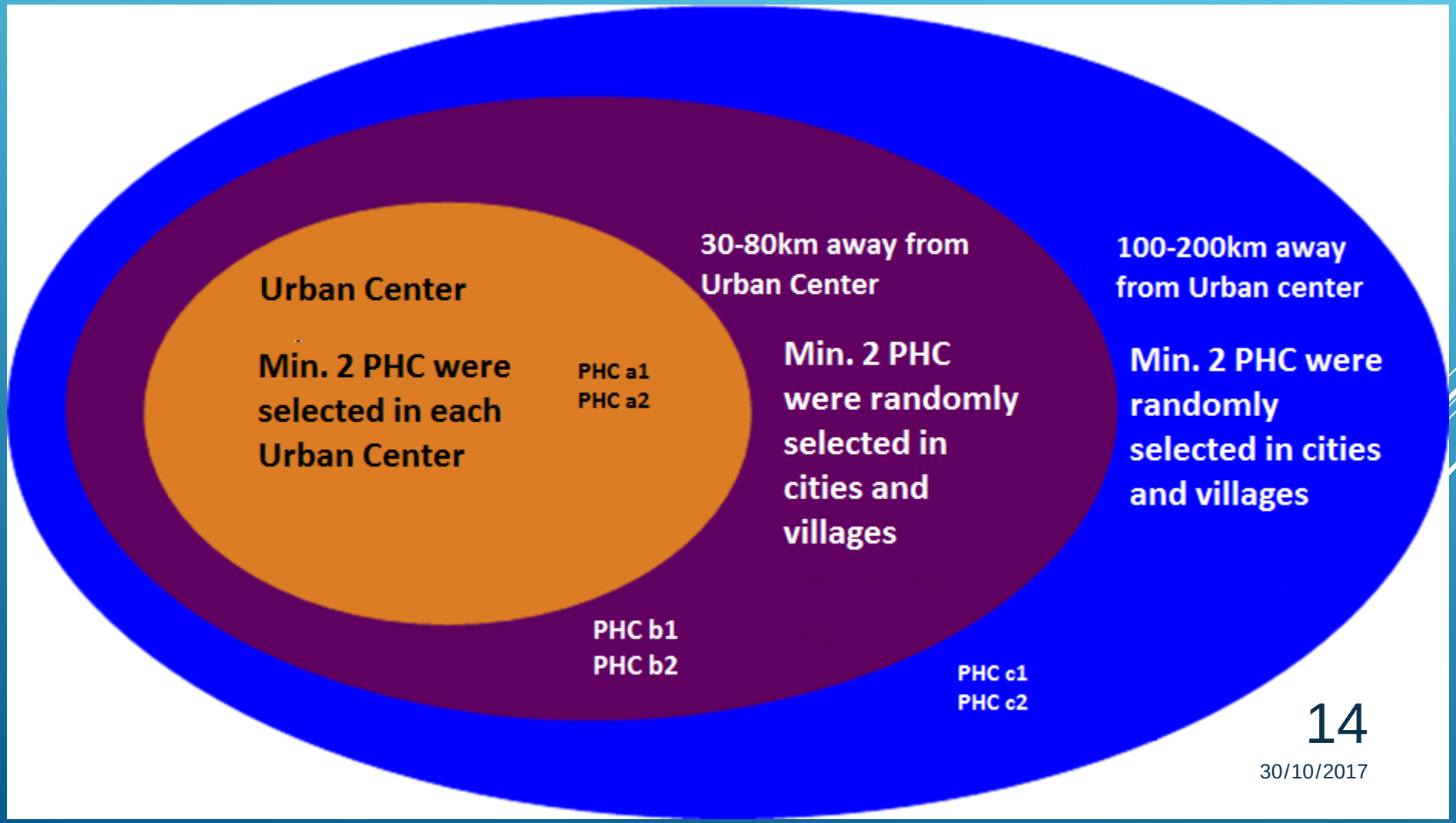
  - **Primary Health Centers(PHC) which doesn't meet the defined areas and all PHC of Diffa area due to security reasons.(BOKO HARAM PROBLEM)**

- **Data capture and analysis:**

  - **Excel 2010**
  - **Word 2010**
  - **Epi-info 3.5.4**

METHODOLOGY (2/2)

❑Inclusion Criteria:



RESULTS

DISTRIBUTION OF POPULATION BY SEX

Sex	Size	%
Male	3426	25,4
Female	10043	74,6
Total	13469	100

GLOBAL DISTRIBUTION OF CARDIOVASCULAR RISK FACTORS

Cardiovascular Risk Factor	%
HIGH Blood Pressure	28,8
Diabetes	06,1
Global Obesity BMI	22,5
Abdominal Obesity (WS)	53,8
Physical inactivity (no physical and athletic activity of at least 30 mn / week)	54,3
Tobacco (current smoker)	6,9

Distribution of population by educational attainment and blood pressure

HBP AND SCHOOLING

	Blood Pressure		
Level of Education	Normal	High	Total
Unschooled	66,3%	33,7%	100%
Educated	74,3%	25,7%	100%
All	71,2%	28,8%	100%

Distribution of population by main occupation and blood pressure

	Occupation	Farmers	Traders	Temporary Workers	Jobless	Employees	All
SYSTOLIC BP	NORMAL	67,9%	71,5%	81,3%	80,8%	80,0%	78,7%
	ABNORMAL	32,1%	28,5%	18,7%	19,2%	20,0%	21,3%
	TOTAL	100%	100%	100%	100%	100%	100%
DIASTOLIC BP	NORMAL	50,7%	62,3%	73,4%	76,6%	72,9%	71,2%
	ABNORMAL	49,3%	37,7%	26,6%	23,4%	27,1%	28,8%
	TOTAL	100%	100%	100%	100%	100%	100%

DISTRIBUTION OF THE POPULATION ACCORDING TO THE BODY MASS INDEX (BMI)

Nutritional status	Male	Female	All
Malnutrition (undernutrition) 0 ≤ BMI <18.5	16,9%	8,3%	10,5%
Normal 18,5 ≤BMI≤ 24,9	58,1%	33,9%	40,0%
Overweight 25 ≤ BMI ≤ 29,9	14,8%	31,1%	27,0%
Obese BMI ≥ 30	10,1%	26,7%	22,5%
Total	100%	100%	100%

DISTRIBUTION OF POPULATION AGED 15 TO 85 YEARS BY WAIST CIRCUMFERENCE

Status (Waist)	Men	Women
Normal	76,7	35,7
Abdominal Obesity (WS)	23,3	64,3
Total	100	100

CALCULATION OF THE FOOD CONSUMPTION SCORE (FOOD CONSUMPTION SCORE: FOOD DIVERSITY SCORE)

- **It is an indicator that measures the quality of household food supply.**
- **It provides an understanding of the accessibility and use of food by households. It is calculated on the basis of dietary diversity, frequency and nutritional importance of each of the eight food groups selected.**

FOOD CONSUMPTION SCORE: FOOD DIVERSITY SCORE

- It is calculated using the following formula :

$$\text{Score} = \sum_{i=1}^{8} P_i * N_i$$

Where

- i : represents the eight food groups selected ;
- P_i : represents the weight of group i ($0.5 \leq P_i \leq 4$) and
- N_i :represents the number of days of consumption for each food group ($N_i \leq 7$ days).

CALCULATION OF FOOD CONSUMPTION SCORE(FOOD CONSUMPTION SCORE)

The different intervals of the score are as follows:

- **If the score is less than 28, then the household food consumption is poor;**
- **If the score is between 28.5 and 42, food consumption is intermediate;**
- **If the score is greater than or equal to 42.5, then food consumption is acceptable.**

CALCULATION OF FOOD CONSUMPTION SCORE(FOOD CONSUMPTION SCORE)

Group	Food Group	Food	Weighting
1	Cereals and tubers	Fresh corn, dry corn, rice, sorghum, tubers	2
2	Legumin	Legumin (beans)	3
3	Legume	Vegetables and leaves	1
4	Fruits	Fruits	1
5	Animal protein	Fresh dried or smoked fish, poultry, Shrimp, fresh or dried meat, eggs	4
6	Milk and dairy products	Dairy Products	4
7	Sugar	Sugar	0,5
8	Oil	Oil	0,5

DISTRIBUTION OF THE POPULATION AGED 15 TO 85 ACCORDING TO THE QUALITY OF THE FOOD AND THE NUTRITIONAL STATUS

Food diversity score	Malnourished %	Normal %	Overweight %	Obese %	Total %
25-45	14,9	30,3	54,9	0,0	100
46-66	8,6	46,5	28,6	16,3	100
67-87	6,9	43,4	29,0	20,7	100
87-112	13,0	36,7	24,6	25,6	100
All	10,5	40,1	26,9	22,5	100

Distribution of population according to sport practice and waist circumference

Waist Circumference %	Practice sports regularly %	Practice sports rarely %	Former Athlete %	Never practiced sport %	All %
Normale	58,7	52,9	57,0	34,3	46,2
Abdominal Obesity (T T)	41,3	47,1	43,0	65,7	53,8
Total	100	100	100	100	100

DISTRIBUTION OF POPULATION BY SPORT PRACTICE AND BLOOD PRESSURE

BLOOD PRESSURE		Practice sports regularly	Practice sports rarely	Former Athlete	Never Praticed Sport	All
SYSTOLIC BP	NORMAL	83,7%	81,4%	65,0%	76,0%	71,2%
	HIGH	16,3%	18,6%	35,0%	24,0%	28,8%
	TOTAL	100%	100%	100%	100%	100%
DIASTOLIC BP	NORMAL	76,2%	73,2%	79,9%	66,1%	71,2%
	HIGH	23,8%	26,8%	20,1%	33,9%	28,8%
	TOTAL	100%	100%	100%	100%	100%

Distribution of population by BMI and main occupation

BMI %	Farmers %	Traders %	Temporary Workers %	Jobless	Employees %	All %
Malnourished	10,8	3,8	6,6	23,2	7,8	10,5
Normal	49,2	36,3	36,1	49,7	36,5	40,0
Overweight	15,5	27,5	31,0	18,0	33,2	27,0
Obese	24,5	32,4	26,3	9,1	22,6	22,5
Total	100	100	100	100	100	100

Distribution of population by waist circumference and main occupation

Waist circumference %	Farmers %	Traders %	Temporary Workers %	Jobless %	Employees %	All %
Normal	62,8	29,0	38,9	69,3	42,5	46,2
Abdominal Obesity (WS)	37,2	71,0	61,1	30,7	57,5	53,8
Total	100	100	100	100	100	100

PREVALENCE OF METABOLIC SYNDROME

Metabolic Syndrom	Frequency	%
Absence	12076	89,7
Presence	1393	10,3
Total	13469	100

DISTRIBUTION OF METABOLIC SYNDROME BY SEX.

Sex	Absence	Presence	Total
Male	94,2%	5,8%	100%
Female	88,1%	11,9%	100%
All	89,7%	10,3%	100%

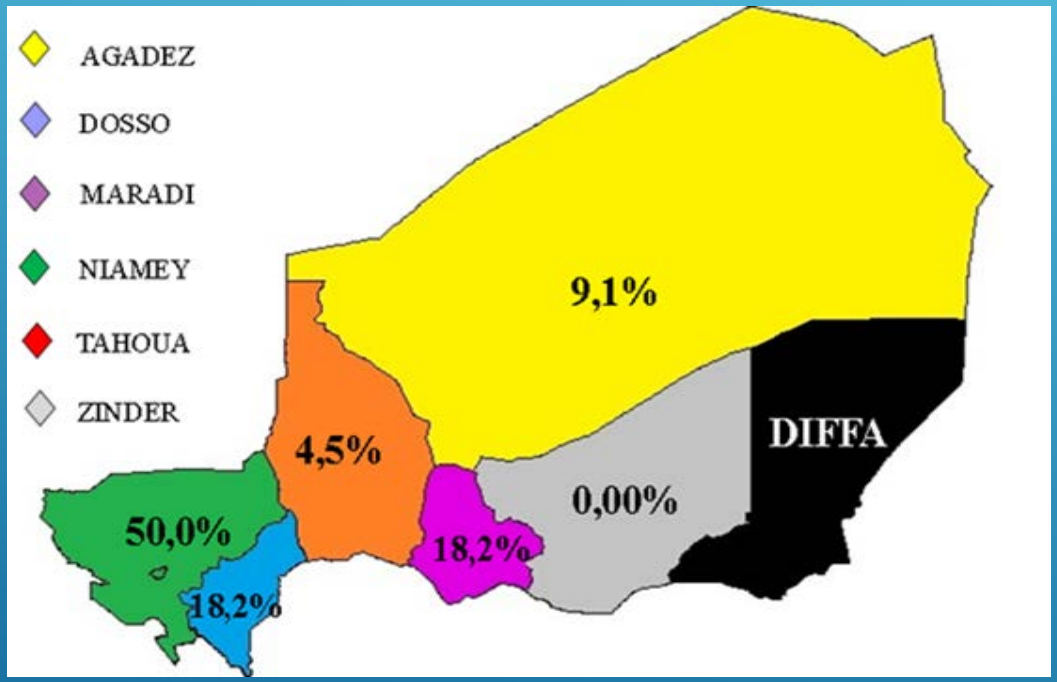
RESULTS (1/7)

1. Medical and health coverage aspect in the 50PHC

Physicians (Doctors)

22 Doctors → **0,44** doctors/PHC ; Ratio(m/p) ≈ 1/83 548 inhbts

1 Cardiologist/1,5 Million inhbts



Nurses

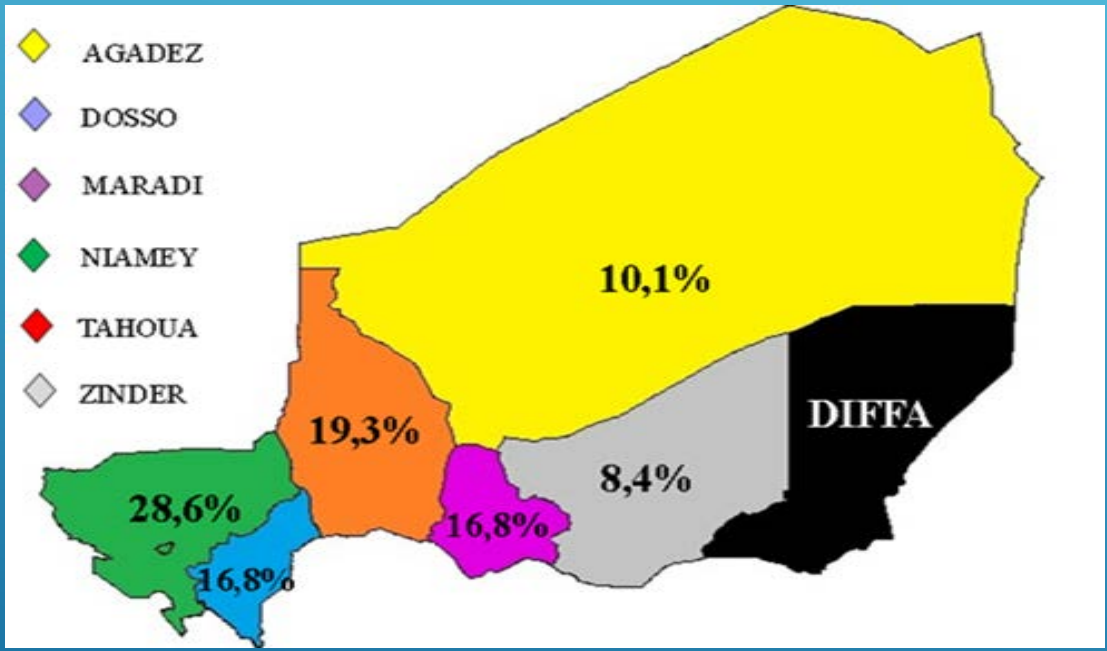
508 nurses → **10,16** nurse/PHC ; Ratio (i/p) ≈ 1/3 618 inhbts

RESULTS (2/7)

2. CVD and CV risk factors epidemiologic aspects.

Hypertensive patients screened

119 Hypertensive patients → + 2 Hypertensive patients/PHC



Diabetics Screened

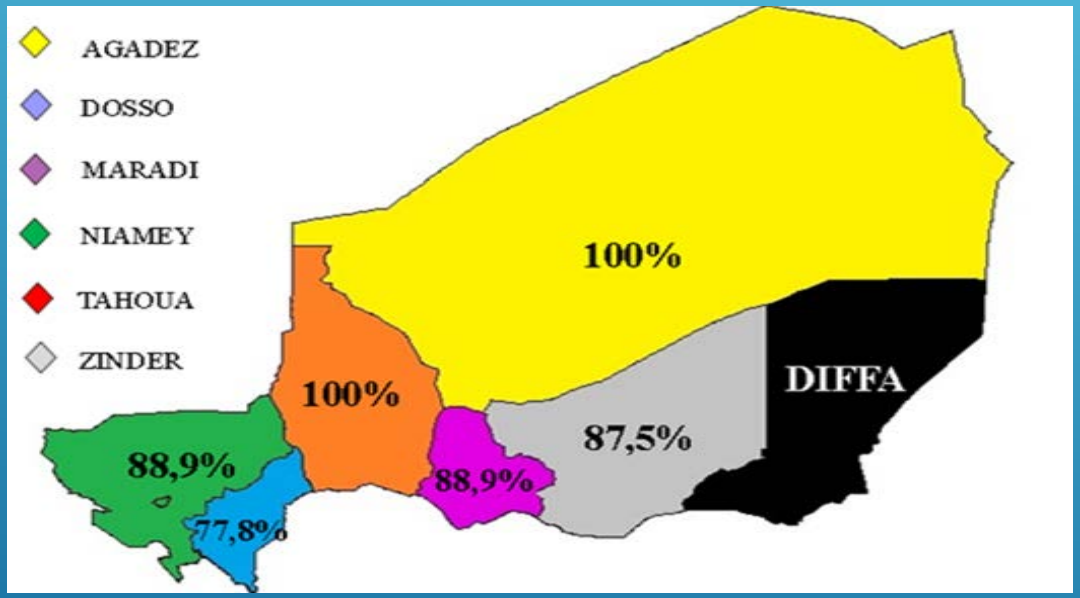
45 diabetics → ≈ **1** diabetic/PHC

RESULTS (3/7)

3. Proportion of files related to directives and guidelines

Directives and Guidelines Files related to the List of Essential Medicines

45/50PHC ➔ **90%**



- ***Directives and Guidelines Files related to management of HBP*** 2/50 PHC ➔ **4%**
- ***Directives and Guidelines Files related to management of diabetes*** 1/50 PHC ➔ **2%**
- ***Directives and Guidelines files related to management of hypercholesterolemia*** 1/50 PHC ➔ 2%

RESULTS (4/7)

3. Proportion of files related to directives and guidelines

None of the 50 PHC +

Directives and Guidelines files related to the management of Acute Coronary

Syndrom

Directives and Guidelines files related to management of Rheumatic heart

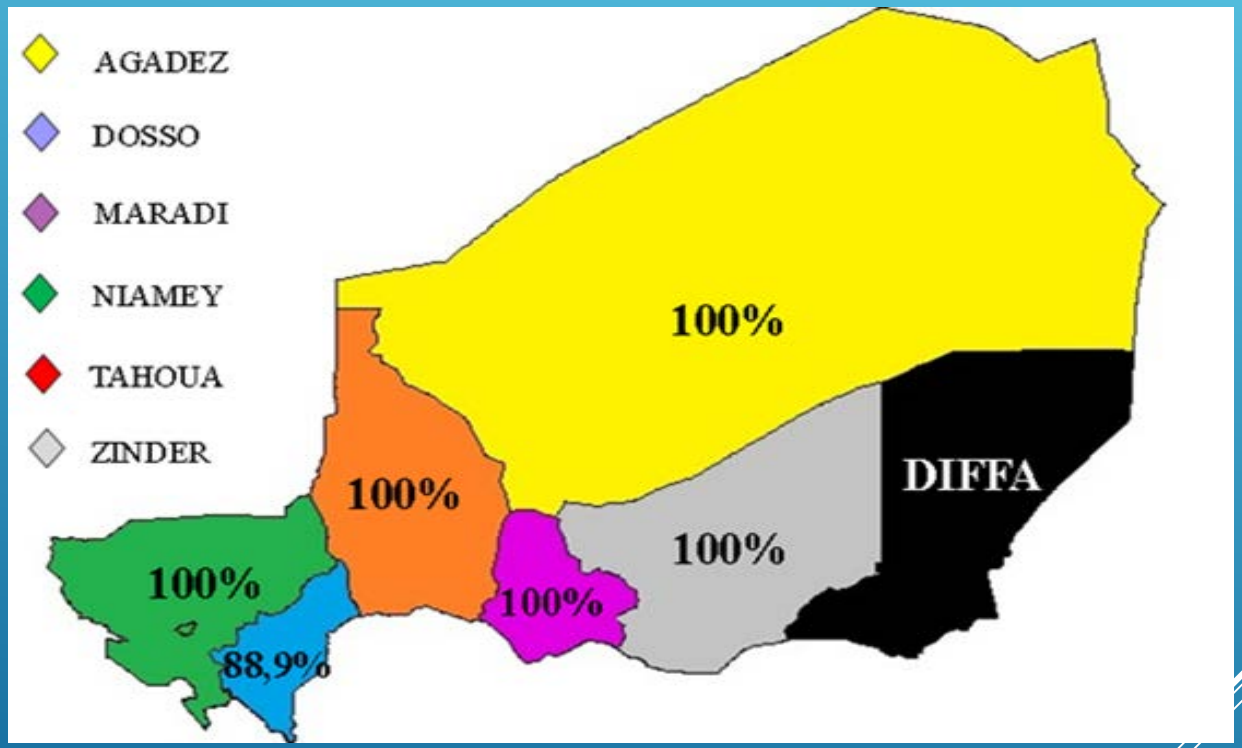
disease

Files related to the WHO PEN Package Directive

RESULTS (5/7)

4. Proportion of basic equipment for monitoring

Sphygmomanometer : 49/50 PHC + **98%**

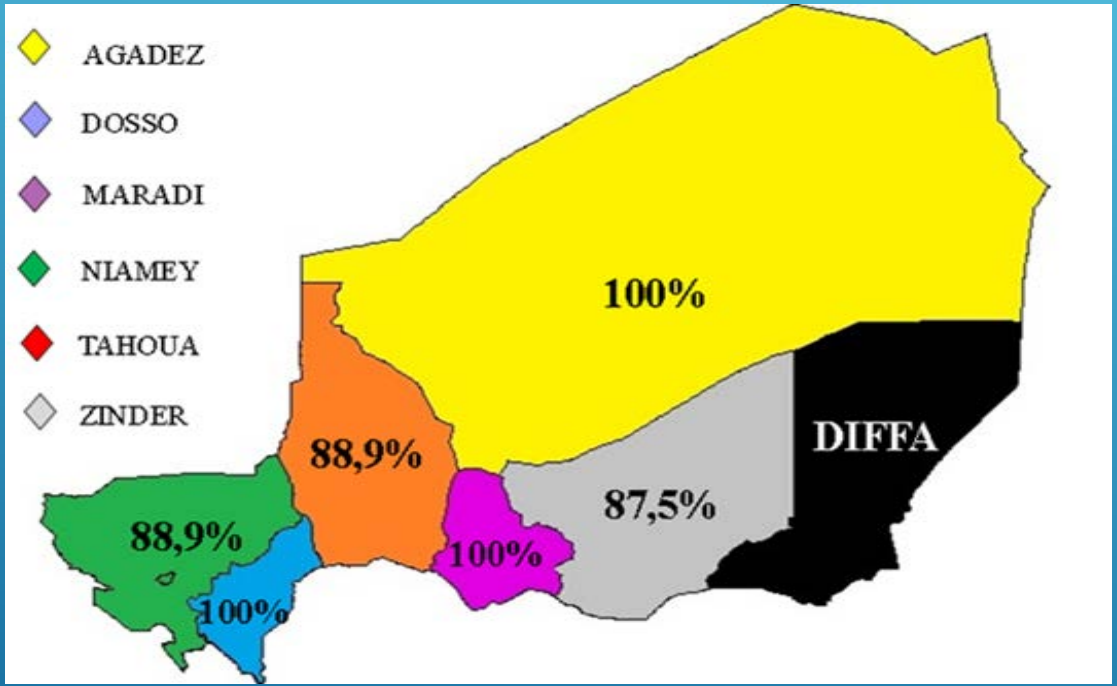


Glucometer 7/50 PHC + **14%**

RESULTS (6/7)

5. Essential Medicines Proportion.

Furosemide : 47/50 PHC ➔ **94%**



Nifedipine 13/50 PHC➔**26%**

Oral antidaibetics (OA) 4/50 PHC ➔ **8%**

Aldomet 9/50 PHC ➔ **18%**

Insuline 2/50 PHC ➔ **4%**

Captopril 7/50 PHC ➔ **14%**

Aspirin 36/50 PHC ➔ **72%**

Statins 1/50 PHC ➔ **2%**

RESULTS (7/7)

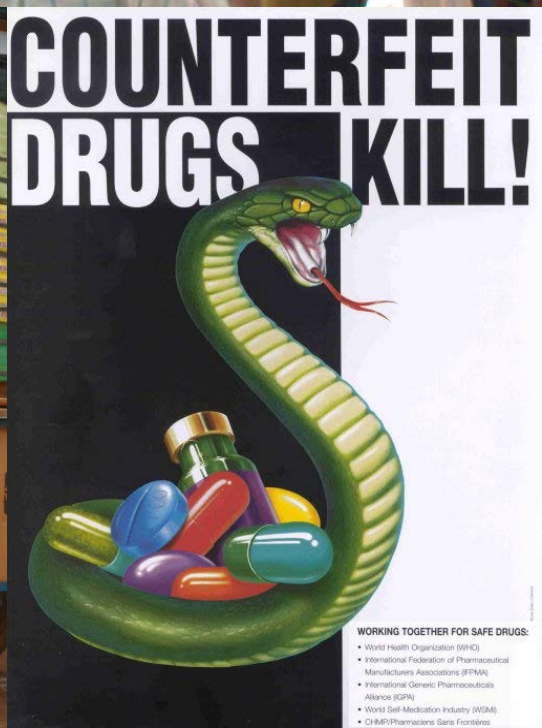
5. Essential Medicines Proportion

- **None of the PHC +**

Aldosterone

Beta blockers

Angiotensin II receptor antagonists (ARA II)


COUNTERFEIT DRUGS KILL!
WORKING TOGETHER FOR SAFE DRUGS:
• World Health Organization (WHO)
• International Federation of Pharmaceutical Manufacturers Associations (IFPMA)
• International Generic Pharmaceuticals Alliance (IGPA)
• World Self-Medication Industry (WSMI)
• CHMP/Pharmaciens Sans Frontières

Average number of Doctors/PHC

OUR STUDY = 0,44

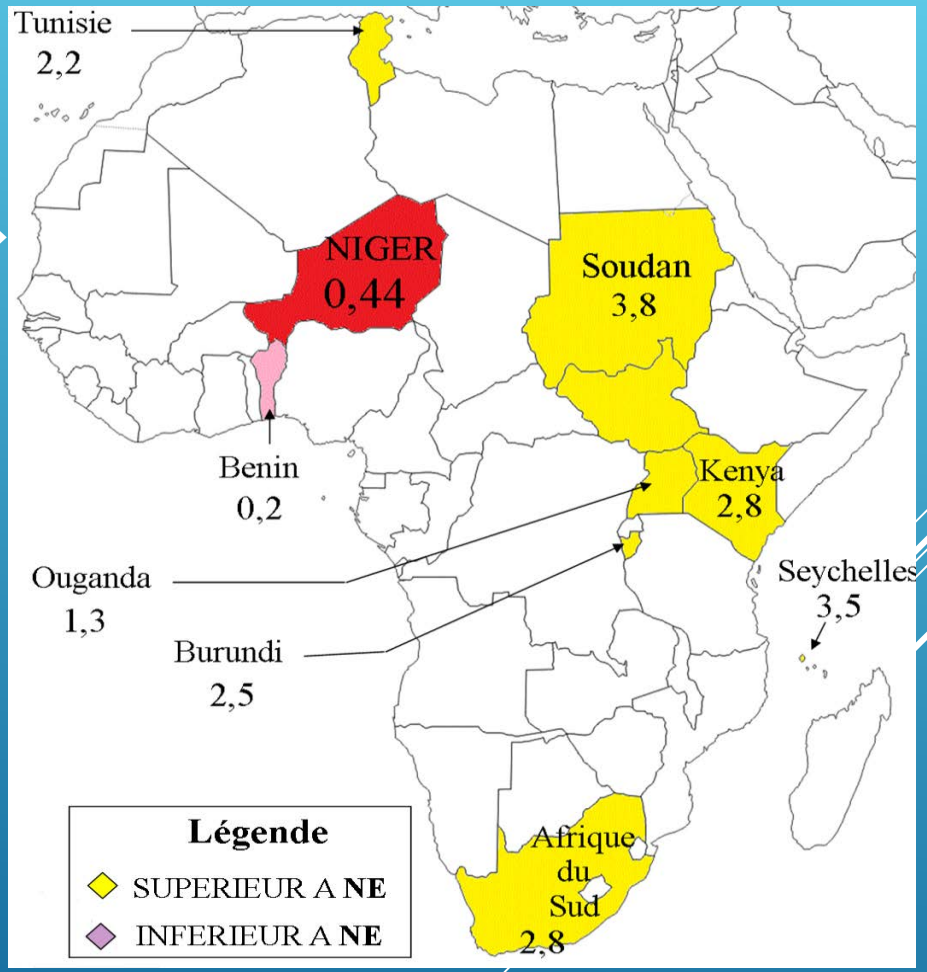
BOVET P, GAMRA H, TOURE IA, and coll. (2016)

> Benin: **0,2**

Average number of nurses / PHC

OUR STUDY = 10,16

> Seychelles: **10,5**

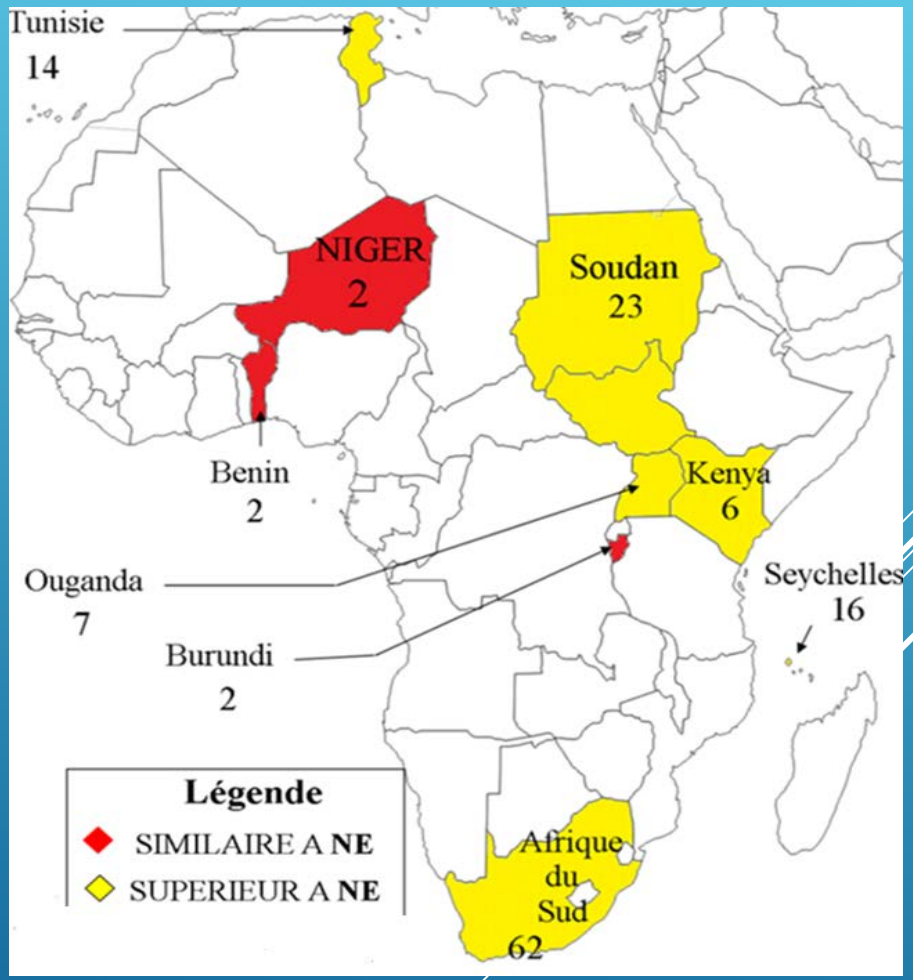


Daily average of hypertensive patients/PHC

OUR STUDY = 2

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)

= Benin and Burundi: 2



Hypertension screening rate

OUR STUDY = 6,47%

NE: **NIGER 2017** = 28,84%

< STEP WISE SURVEY. **NIGER** 20O7: **22,8%.**

Daily average of diabetics patients / PHC

OUR STUDY = 1

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)

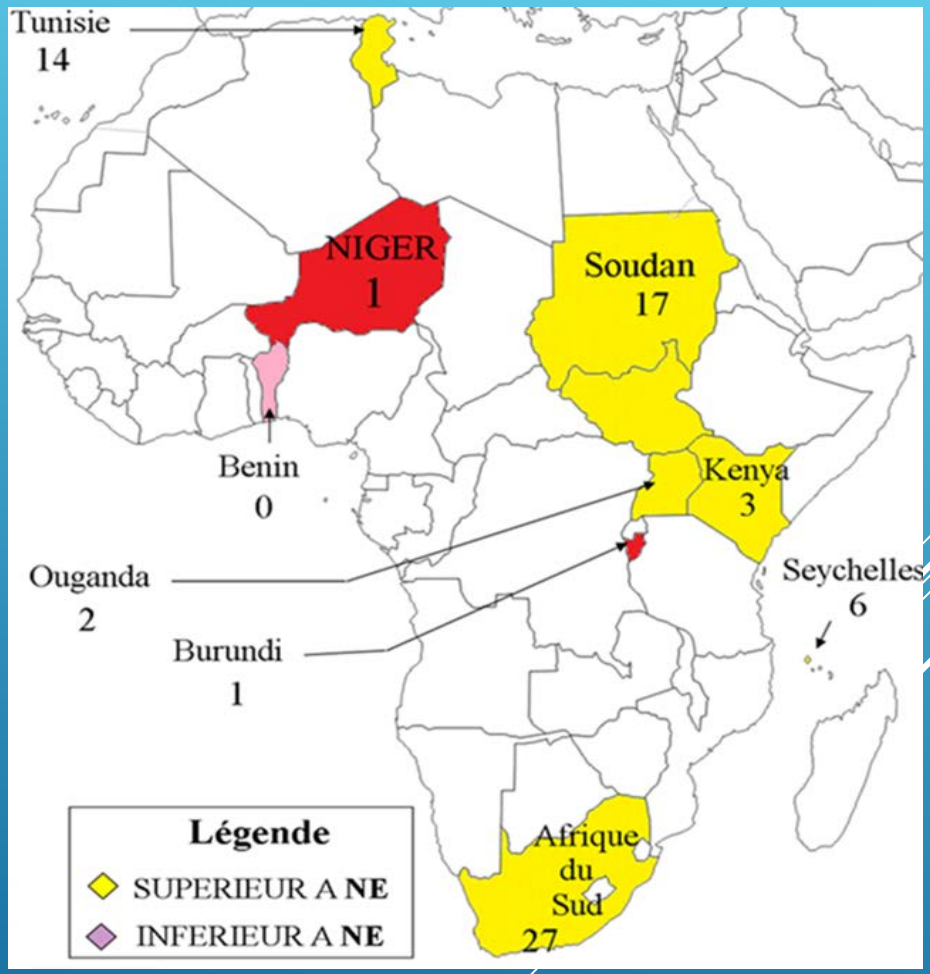
= Burundi: **1**

> Benin: **0**

Diabetes Screening Rate

OUR STUDY = 2,44%

< **Rapport Step wise 2007: 4,3%.**



Proportion of files related to Directives and Guidelines

HBP

OUR STUDY = 4%

BOVET P, GAMRA H , TOURE IA and coll. (2016)

> Burundi: **0%**

Diabetes

OUR STUDY = 2%

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)

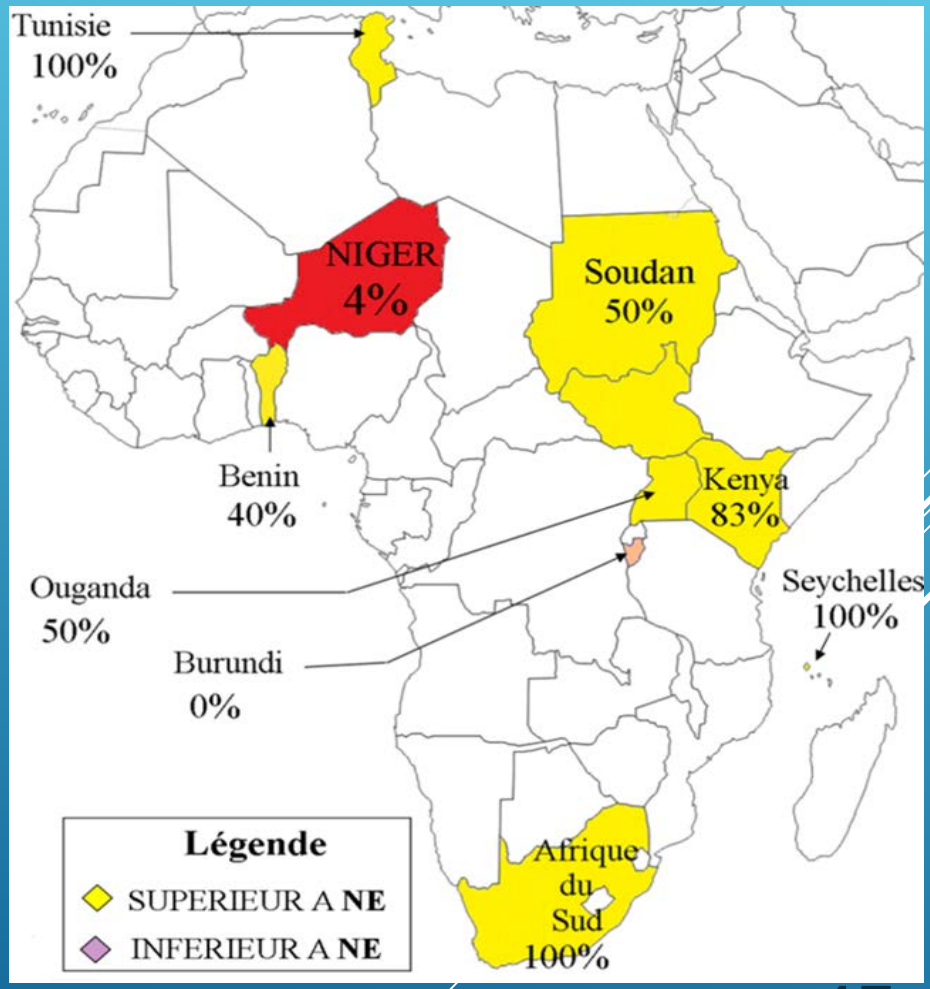
> Burundi: **0%**

Hypercholesterolemia

OUR STUDY = 2%

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)

> Benin, Burundi and Ouganda : 0%



Sphygmomanometers

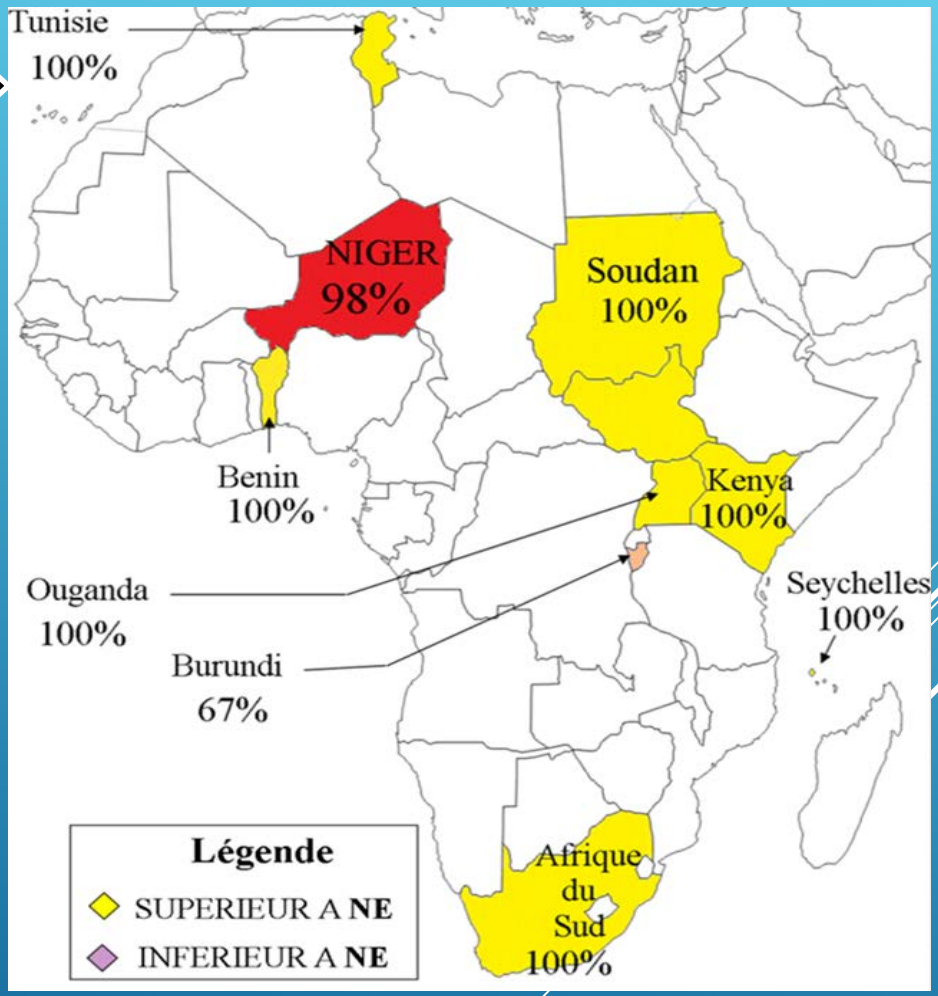
OUR STUDY = 98%

= **ALAOUI A.** Morocco 2012: **98%**.

≈ **SHIREEN A. Se**negal 2015: **97,8%**.

< **HARNAFI K.** Morocco 2013: **100%**

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)



Glucometers

OUR STUDY = 14%

< **ALAOUI A.** Morocco 2012: **93%**.

< **BERAN D. :** - **43%** Mali (2003)

- **54%** Zambia (2003)

- **87%** Mozambique (2009)

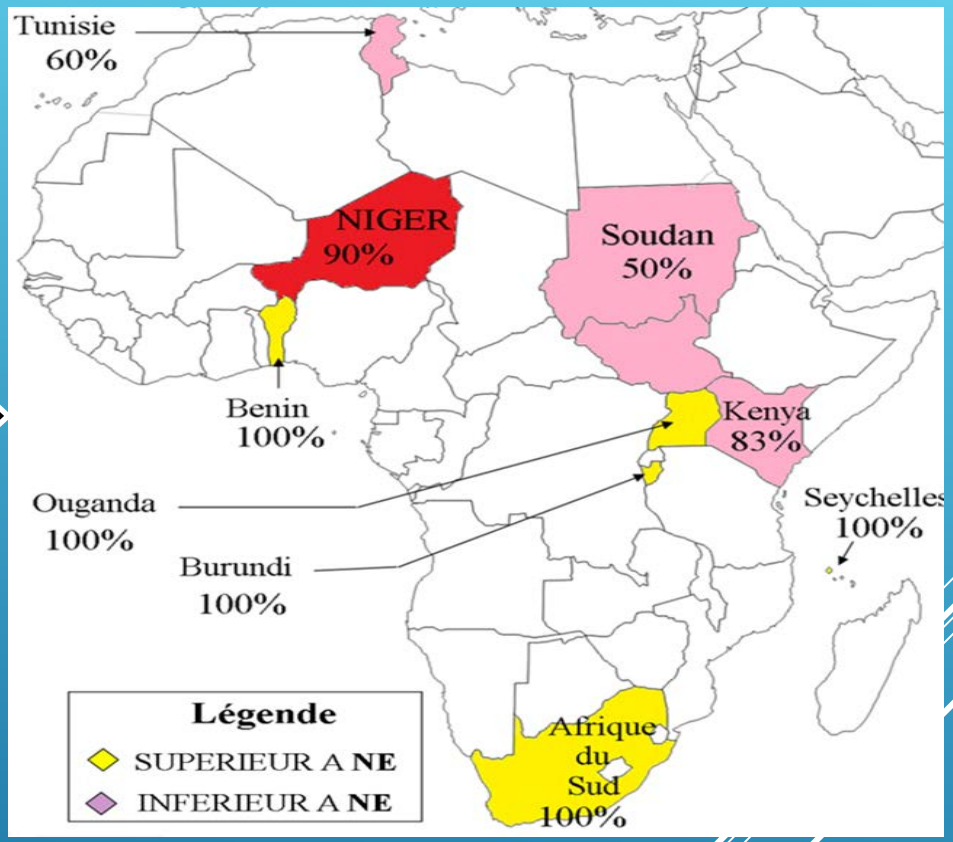
< **BOVET P, GAMRA H ,TOURE IA, et coll.** (2016)

Proportion of files related to Essential Medicine List

OUR STUDY = 90%

BOVET P, GAMRA H ,TOURE IA, and coll. (2016)

> Tunisia, Soudan and Kenya



Furosemide 94% **Nifedipine 26%** **Aldomet 18%** **Captopril 14%**

Oral Antidiabetics 8% **Insulin 4%** **Aspirin 72%** **Statins 4%**

UNIVERSAL MEDICO-SOCIAL COVERAGE:2.6%

This study shows that many primary care clinics are not well prepared to implement the Directives of guidelines for accurate diagnosis and management of hypertension and other CVRF.

Most office practices will benefit from support to develop their capacities

At the end of our study:

- **A low healthcare coverage of PHC Staff for management of CVD and CV Risk factors**
- **A screening rate for HBP and Diabetes and other CVRF in PHC far below prevalence at national level**
- **Insufficient directives and guidelines for management of CVD and CR Risk factors**
- **Low availability of BASIC Equipments and Essential Medicines againts CVD and CV Risk factors**

RECOMMENDATIONS (1/2)

❖ **To the Ministery of Public Health:**

- **Activate → National Program → CVD**
- **Work out → Guidelines of Management → Available in PHC**
- **Accessibility → EM CVD and CV Risk factors in PHC**
- **Provide PHC with basic equipment for monitoring of CVD and CV Risk factors**
- **Develop and promote lifestyle change policies, with particular emphasis on increasing physical activity and adapting a balanced diet.**
- **Promote Education and awareness programs on CVD**

RECOMMENDATIONS (2/2)

- **To the Health Sciences High Schools:**
  - **Promote → Training of specialists → Management of CVD**
- **To Health Care Personnel :**
  - **Support → Follow-up of patients with CVD**
- **To the patients:**
  - **Respect, advise, treatment and appointment → Good follow-up**
- **To the population:**
  - **Regular check up → Prevention → CVD and CV Risk Factors**

YES NEEDS FOR CV CARE IN NIGER THERE ARE A LOT

At Khartoum the Blue Nile and the White Nile meet to form the main trunk of the Nile River

IN KHARTOOM ALL CARDIOLOGISTS MEET TO FIND SOLUTIONS FOR AFRICAN HEART PROBLEMS AND SAVE LIFES

THANK YOU

CHOUKRAN