IS THERE A NEED TO ACCESS CARDIOVASCULAR CARE IN NIGER?

PROF TOURE ALI IBRAHIM M.D.,FFSC,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

- Service de médecine et Cardiologie CHU LAMORDE, pr_toure@yahoo.fr
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

30/10/2017
### INTRODUCTION (2/4)

- **CVD Risk factor:**
  - **Major**
    - Smoking
    - High Blood Pressure
    - Dyslipidemia
    - Type 2 Diabetes
  - **Age:** ♂ ≥ 50 years ♂ ≥ 60 years

- **Predisposing**
  - Obesity: (CBI ≥ 30 kg/m²)
  - Inactivity
  - CV family history
  - Early Strokes (before 45 year old)
  - Menopause

**Discussed**

↑ of triglycerides, lipoproteins LDL, genetics and infectious factors, elevation of homocysteine...
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)


- 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

30/10/2017
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

Characteristics of the study:

It’s a transversal 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)

- **Characteristic 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
Inclusion Criteria:

- Urban Center
  - Min. 2 PHC were selected in each Urban Center
  - PHC a1
  - PHC a2
  - 30-80km away from Urban Center

- Min. 2 PHC were randomly selected in cities and villages
  - PHC b1
  - PHC b2
  - 100-200km away from Urban Center

- Min. 2 PHC were randomly selected in cities and villages
  - PHC c1
  - PHC c2

30/10/2017
RESULTS
### DISTRIBUTION OF POPULATION BY SEX

<table>
<thead>
<tr>
<th>Sex</th>
<th>Size</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3426</td>
<td>25.4</td>
</tr>
<tr>
<td>Female</td>
<td>10043</td>
<td>74.6</td>
</tr>
<tr>
<td>Total</td>
<td>13469</td>
<td>100</td>
</tr>
</tbody>
</table>
## Global Distribution of Cardiovascular Risk Factors

<table>
<thead>
<tr>
<th>Cardiovascular Risk Factor</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH Blood Pressure</td>
<td>28,8</td>
</tr>
<tr>
<td>Diabetes</td>
<td>06,1</td>
</tr>
<tr>
<td>Global Obesity BMI</td>
<td>22,5</td>
</tr>
<tr>
<td>Abdominal Obesity (WS)</td>
<td>53,8</td>
</tr>
<tr>
<td>Physical inactivity (no physical and athletic activity of at least 30 mn / week)</td>
<td>54,3</td>
</tr>
<tr>
<td>Tobacco (current smoker)</td>
<td>6,9</td>
</tr>
</tbody>
</table>
# Distribution of population by educational attainment and blood pressure

## HBP AND SCHOOLING

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Blood Pressure</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unschooled</td>
<td>66.3%</td>
<td>33.7%</td>
</tr>
<tr>
<td>Educated</td>
<td>74.3%</td>
<td>25.7%</td>
</tr>
<tr>
<td>All</td>
<td>71.2%</td>
<td>28.8%</td>
</tr>
</tbody>
</table>
# Distribution of population by main occupation and blood pressure

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Farmers</th>
<th>Traders</th>
<th>Temporary Workers</th>
<th>Jobless</th>
<th>Employees</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYSTOLIC BP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMAL</td>
<td>67,9%</td>
<td>71,5%</td>
<td>81,3%</td>
<td>80,8%</td>
<td>80,0%</td>
<td>78,7%</td>
</tr>
<tr>
<td>ABNORMAL</td>
<td>32,1%</td>
<td>28,5%</td>
<td>18,7%</td>
<td>19,2%</td>
<td>20,0%</td>
<td>21,3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>DIASTOLIC BP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMAL</td>
<td>50,7%</td>
<td>62,3%</td>
<td>73,4%</td>
<td>76,6%</td>
<td>72,9%</td>
<td>71,2%</td>
</tr>
<tr>
<td>ABNORMAL</td>
<td>49,3%</td>
<td>37,7%</td>
<td>26,6%</td>
<td>23,4%</td>
<td>27,1%</td>
<td>28,8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
### DISTRIBUTION OF THE POPULATION ACCORDING TO THE BODY MASS INDEX (BMI)

<table>
<thead>
<tr>
<th>Nutritional status</th>
<th>Male</th>
<th>Female</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition (undernutrition)</td>
<td>16,9%</td>
<td>8,3%</td>
<td>10,5%</td>
</tr>
<tr>
<td>0 ≤ BMI &lt;18.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>58,1%</td>
<td>33,9%</td>
<td>40,0%</td>
</tr>
<tr>
<td>18,5 ≤BMI≤ 24,9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>14,8%</td>
<td>31,1%</td>
<td>27,0%</td>
</tr>
<tr>
<td>25 ≤ BMI ≤ 29,9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese</td>
<td>10,1%</td>
<td>26,7%</td>
<td>22,5%</td>
</tr>
<tr>
<td>BMI ≥ 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Status (Waist)</td>
<td>Men</td>
<td>Women</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>76,7</td>
<td>35,7</td>
<td></td>
</tr>
<tr>
<td>Abdominal Obesity (WS)</td>
<td>23,3</td>
<td>64,3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
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:

\[
\text{Score} = \sum_{i=1}^{8} P_i \times N_i
\]

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**

<table>
<thead>
<tr>
<th>Group</th>
<th>Food Group</th>
<th>Food</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cereals and tubers</td>
<td>Fresh corn, dry corn, rice, sorghum, tubers</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Legumin</td>
<td>Legumin (beans)</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Legume</td>
<td>Vegetables and leaves</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Fruits</td>
<td>Fruits</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Animal protein</td>
<td>Fresh dried or smoked fish, poultry, Shrimp, fresh or dried meat, eggs</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Milk and dairy products</td>
<td>Dairy Products</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Sugar</td>
<td>Sugar</td>
<td>0,5</td>
</tr>
<tr>
<td>8</td>
<td>Oil</td>
<td>Oil</td>
<td>0,5</td>
</tr>
<tr>
<td>Food diversity score</td>
<td>Malnourished</td>
<td>Normal</td>
<td>Overweight</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>25-45</td>
<td>14,9%</td>
<td>30,3%</td>
<td>54,9%</td>
</tr>
<tr>
<td>46-66</td>
<td>8,6%</td>
<td>46,5%</td>
<td>28,6%</td>
</tr>
<tr>
<td>67-87</td>
<td>6,9%</td>
<td>43,4%</td>
<td>29,0%</td>
</tr>
<tr>
<td>87-112</td>
<td>13,0%</td>
<td>36,7%</td>
<td>24,6%</td>
</tr>
<tr>
<td>All</td>
<td>10,5%</td>
<td>40,1%</td>
<td>26,9%</td>
</tr>
</tbody>
</table>
## Distribution of population according to sport practice and waist circumference

<table>
<thead>
<tr>
<th>Waist Circumference</th>
<th>Practice sports regularly</th>
<th>Practice sports rarely</th>
<th>Former Athlete</th>
<th>Never practiced sport</th>
<th>All %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normale</td>
<td>58,7%</td>
<td>52,9%</td>
<td>57,0%</td>
<td>34,3%</td>
<td>46,2%</td>
</tr>
<tr>
<td>Abdominal Obesity (T T)</td>
<td>41,3%</td>
<td>47,1%</td>
<td>43,0%</td>
<td>65,7%</td>
<td>53,8%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
## DISTRIBUTION OF POPULATION BY SPORT PRACTICE AND BLOOD PRESSURE

<table>
<thead>
<tr>
<th>BLOOD PRESSURE</th>
<th>Practice sports regularly</th>
<th>Practice sports rarely</th>
<th>Former Athlete</th>
<th>Never Practiced Sport</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTOLIC BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMAL</td>
<td>83,7%</td>
<td>81,4%</td>
<td>65,0%</td>
<td>76,0%</td>
<td>71,2%</td>
</tr>
<tr>
<td>HIGH</td>
<td>16,3%</td>
<td>18,6%</td>
<td>35,0%</td>
<td>24,0%</td>
<td>28,8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>DIASTOLIC BP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMAL</td>
<td>76,2%</td>
<td>73,2%</td>
<td>79,9%</td>
<td>66,1%</td>
<td>71,2%</td>
</tr>
<tr>
<td>HIGH</td>
<td>23,8%</td>
<td>26,8%</td>
<td>20,1%</td>
<td>33,9%</td>
<td>28,8%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
## Distribution of population by BMI and main occupation

<table>
<thead>
<tr>
<th>BMI</th>
<th>Farmers %</th>
<th>Traders %</th>
<th>Temporary Workers %</th>
<th>Jobless %</th>
<th>Employees %</th>
<th>All %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnourished</td>
<td>10,8</td>
<td>3,8</td>
<td>6,6</td>
<td>23,2</td>
<td>7,8</td>
<td>10,5</td>
</tr>
<tr>
<td>Normal</td>
<td>49,2</td>
<td>36,3</td>
<td>36,1</td>
<td>49,7</td>
<td>36,5</td>
<td>40,0</td>
</tr>
<tr>
<td>Overweight</td>
<td>15,5</td>
<td>27,5</td>
<td>31,0</td>
<td>18,0</td>
<td>33,2</td>
<td>27,0</td>
</tr>
<tr>
<td>Obese</td>
<td>24,5</td>
<td>32,4</td>
<td>26,3</td>
<td>9,1</td>
<td>22,6</td>
<td>22,5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
## Distribution of population by waist circumference and main occupation

<table>
<thead>
<tr>
<th>Waist circumference</th>
<th>Farmers %</th>
<th>Traders %</th>
<th>Temporary Workers %</th>
<th>Jobless %</th>
<th>Employees %</th>
<th>All %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>62,8</td>
<td>29,0</td>
<td>38,9</td>
<td>69,3</td>
<td>42,5</td>
<td>46,2</td>
</tr>
<tr>
<td>Abdominal Obesity (WS)</td>
<td>37,2</td>
<td>71,0</td>
<td>61,1</td>
<td>30,7</td>
<td>57,5</td>
<td>53,8</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
### Prevalence of Metabolic Syndrome

<table>
<thead>
<tr>
<th>Metabolic Syndrome</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence</td>
<td>12076</td>
<td>89.7</td>
</tr>
<tr>
<td>Presence</td>
<td>1393</td>
<td>10.3</td>
</tr>
<tr>
<td>Total</td>
<td>13469</td>
<td>100</td>
</tr>
</tbody>
</table>

30/10/2017
# Distribution of Metabolic Syndrome by Sex

<table>
<thead>
<tr>
<th>Sex</th>
<th>Absence</th>
<th>Presence</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>94.2%</td>
<td>5.8%</td>
<td>100%</td>
</tr>
<tr>
<td>Female</td>
<td>88.1%</td>
<td>11.9%</td>
<td>100%</td>
</tr>
<tr>
<td>All</td>
<td>89.7%</td>
<td>10.3%</td>
<td>100%</td>
</tr>
</tbody>
</table>
1. Medical and health coverage aspect in the 50PHC

**Physicians (Doctors)**

22 Doctors $\rightarrow$ 0.44 doctors/PHC ; Ratio(m/p) $\approx$ 1/83 548 inhabts

1 Cardiologist/1.5 Million inhabts

**Nurses**

508 nurses $\rightarrow$ 10.16 nurse/PHC ; Ratio (i/p) $\approx$ 1/3 618 inhabts
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
3. Proportion of files related to directives and guidelines

Directives and Guidelines Files related to the List of Essential Medicines
45/50PHC \(\Rightarrow\) 90%

- Directives and Guidelines Files related to management of HBP 2/50 PHC \(\Rightarrow\) 4%
- Directives and Guidelines Files related to management of diabetes 1/50 PHC \(\Rightarrow\) 2%
- Directives and Guidelines files related to management of hypercholesterolemia 1/50 PHC \(\Rightarrow\) 2%
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*
4. Proportion of basic equipment for monitoring

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

**Glucometer**: 7/50 PHC + 14%
5. Essential Medicines Proportion.

**Furosemide**: 47/50 PHC → 94%

- **Nifedipine**: 13/50 PHC → 26%
- **Aldomet**: 9/50 PHC → 18%
- **Captopril**: 7/50 PHC → 14%
- **Oral antidiabetics (OA)**: 4/50 PHC → 8%
- **Insuline**: 2/50 PHC → 4%
- **Aspirin**: 36/50 PHC → 72%
- **Statins**: 1/50 PHC → 2%

30/10/2017
5. Essential Medicines Proportion

- None of the PHC +

* Aldosterone

* Beta blockers

* Angiotensin II receptor antagonists (ARA II)
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
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 2007: 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%**


> 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. Senegal 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%.
  - 54% Zambia (2003)
  - 87% Mozambique (2009)

Proportion of files related to Essential Medicine List

OUR STUDY = 90%

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

- Tunisia, Soudan and Kenya

Proportion of files related to Essential Medicine List:

- 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 against CVD and CV Risk factors
RECOMMENDATIONS (1/2)

To the Ministry 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 LIVES

THANK YOU CHOUKRAN