Diabetes Screening Campaign

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Table of Content

Statement of Need

The asymptomatic nature of CKD has made it one of the major non communicable diseases of global health importance. Taking into account the major role the kidney has to play in several crucial metabolic processes in the body, loss of function of these miraculous organs has devastating effects on the individual. The leading causes of CKD worldwide are diabetes and hypertension which are also chronic diseases and do not portray any symptoms at their onset. This burden is especially worrisome in low and middle class income countries (LMCIC) where many do not have access to proper health care and a host of them rely on traditional medication without diagnosis or proper dosage to solve their health problems. Unlike the developed countries where they are readily aware of their health conditions and have a strong healthcare system with coverage, in LMCIC such as Cameroon, such facilities are limited. With an abundance of rural areas in relation to urban areas, low awareness level on CKD and its causes, fewer health care facilities in relation to the population, large adherence to traditional medications: many individuals develop CKD without knowing and many progress to end stage kidney disease without being conscious that they have the condition. It is in this light that we sought to carry out a large-scale awareness and screening campaign amongst the general population to sensitize the population on CKD, its causes and also screen for persons in the community for chronic kidney disease. This was done in an attempt to ensure that we have more kidney health ambassadors and advocates so that, through knowledge and effort, the incidence of CKD can be reduced in the population.

Goal:

To sensitize the population of Buea and inform them about diabetes, hypertension, and obesity, as well as their relationship with kidney disease, so as to promote positive lifestyle modification, early detection, and management.

Objectives

To sensitize and screen 300 people in Buea and provide them with information about their risk status for chronic kidney disease, as well as how to prevent or delay the development of the condition.

Specific Objectives

- Screen 300 persons for the leading causes of Kidney disease (diabetes, hypertension)
- Identify high risk persons for developing kidney disease
- Educate the population positive lifestyle modification to prevent kidney disease

Methodology

Campaign site and Design

This campaign was a cross-sectional activity carried out for two days in front of the Molyko Omnisport stadium located in Buea, Southwest Region. This activity was organized in commemoration of World Diabetes Day, which occurred on November 14, 2022.

Population description

This campaign's target population was the population of Buea, especially the elderly population aged 50 and above. However, youths and young adults aged 25 and older were also included in the campaign.

Tests Involved

Body Mass Index, Blood Pressure Measurement, and Blood Sugar Measurement

Campaign structure and flow

- Participants were welcomed, their preliminary information recorded and then asked to sit down for 5 mins prior to testing
- After 5 mins, the participants were then ushered to the BMI station where their weight, height were taken for their body mass index calculations
- Participants were then directed to the blood pressure station, where they were required to sit up straight, feets flat on the floor and BP reading taking with curf at heart level to the participants
- Upon recording their blood pressure readings, the participants were asked to move to the blood sugar station where their blood sugar readings were taken.
- Participants who had cleared all of these stations were then sent to the medical personnel for counseling

Instruments

Blood Pressure machine used is;

Name	Model	Ref
Omron	BP7100	HEM-7121-Z2

Procedure for Blood Pressure measurement shall be done using the Omron protocol [1]

➔ **Interpretation**

Following the guidelines of [2]

Blood pressure indication	Range
Normal	Less than 120/80 mmHg
Pre-Hypertensive	Between 121/80 to 139/89
Hypertensive	140/90mmHg or higher

Blood sugar machine used;

Name	SN
On Call Plus	103A306C595
Sejoy	SEJOY BS-101

➔ **Interpretation of results :** Done following the guidelines of the CDC [3]

Blood sugar test	Prediabetic	Diabetic
Fasting blood sugar (mg|dl)	100 to 125	126
Random Blood sugar (mg|dl)		200

Results

Socio-Demographic

Our campaign included the participation of 174 participants who were residents or travelers present in Buea at the time of the screening. In this population, we had a median age of 32 with the minimum and maximum ages being 17 and 77, respectively. Within this population, males represented 68.2% (118/173) and females 31.8% (55/173) with the majority of the participants hailing from the Southwest (71/168, 42.3%) and Northwest region (72/168, 42.9%). Further investigations revealed that a good proportion of our participants were single (98/173, 56.6%) followed by the married proportion (63/173, 36.4%). The median number of children had by our participants (with or without marriage) was 1, with a mode of 0.

## Assessment of Population knowledge about CKD and their risk status

A marginal majority (90/171, 52.6% of our participants) affirmed having heard about chronic kidney disease. While assessing the participants' knowledge about their status, we found that 10/163 and 5/163 were known to be hypertensive (6.1%) and diabetic (3.1%), respectively. In contrast, 51/167 (30.5%) and 38/165 (23%) of our participants reported to have a family history of diabetes and hypertension, respectively. Furthermore, 12/156 participants had a family member or relative who suffered from/suffering from chronic kidney disease, and a smoking population of 12.5% (21/168) of both shisha (4/168) and cigarettes (17/168).

Measurable Parameters

Body Mass Index:

We had a mean BMI measurement of 27.75 ± 6.23 pulled from the data provided by 153 participants. The distribution of body mass index was represented below:

BMI Distribution amongst participants

>=40
2.0%

35 to 39.9
6.5%

30 to 34.9
15.7%

<=24.9
32.0%

25 to 29.9
43.8%
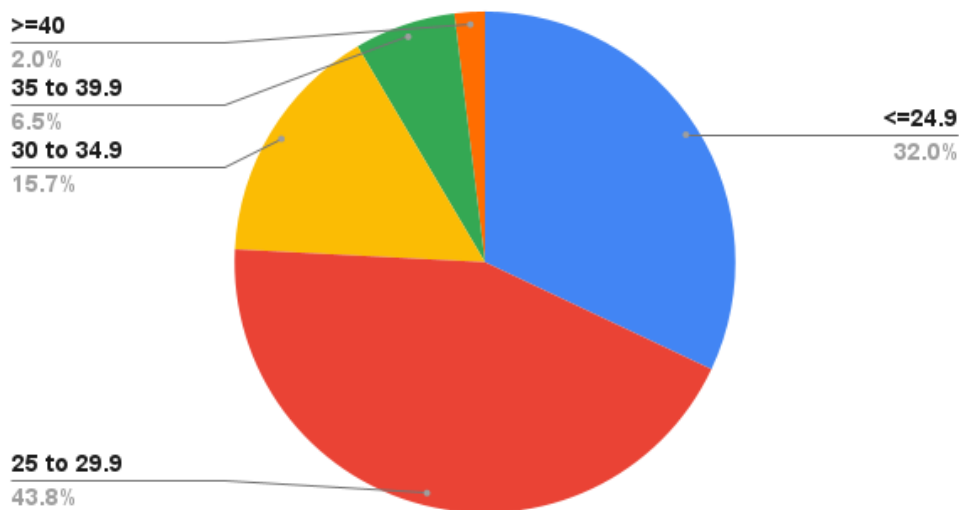
Systolic Blood Pressure Measurement:

In total, 169 participants' blood pressure measurements were taken, giving a mean systolic pressure of 125.13 ± 19.77. The overall percentage of persons who presented as hypertensive was 18.3%, with 33.1% recorded as pre-hypertensive. These values are elevated 3-fold compared to the number of participants who had earlier reported to be known hypertensives. Its distribution is presented below.

Systolic Blood Pressure distribution

>=140
18.3%

121 to 139
36.1%

<=120
45.6%
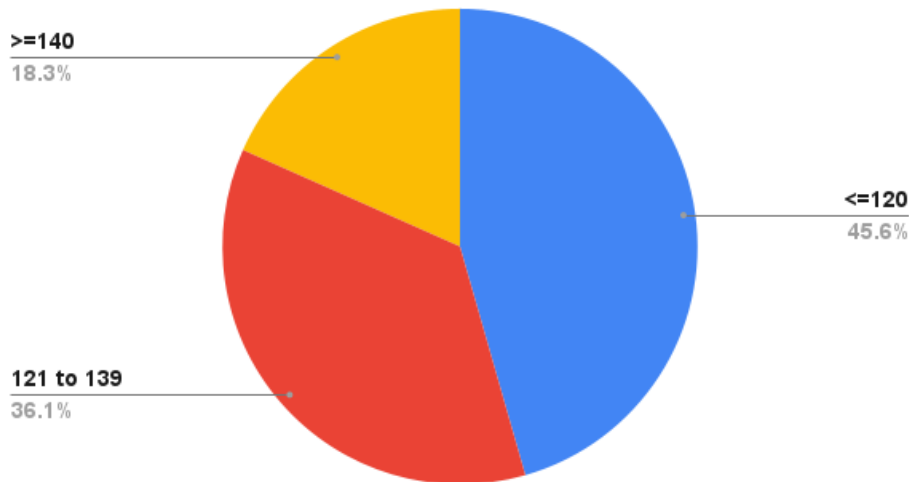
Blood sugar measurements

Blood sugar measurements were taken based on the fasting status of the participants. Random blood sugar (RBS) measurements were used for 89 participants who had eaten and fasting blood sugar (FBS) for another 80 participants who had not eaten. The mean RBS and FBS measurements were recorded as 119.9 ± 40.2 and 101 ± 25.2 respectively. The overall percentage of persons who presented to be diabetic were 5.6% with 12.4% considered as pre-diabetic. These percentages are almost 2-fold compared to the number of persons who had indicated to be known diabetic.

Fasting Blood Sugar Distribution

>=126
15.0%

101 to 126
22.5%

<=100
62.5%

Random Blood Sugar distribution

>=200
5.6%

141 to 199
12.4%

<=140
82.0%
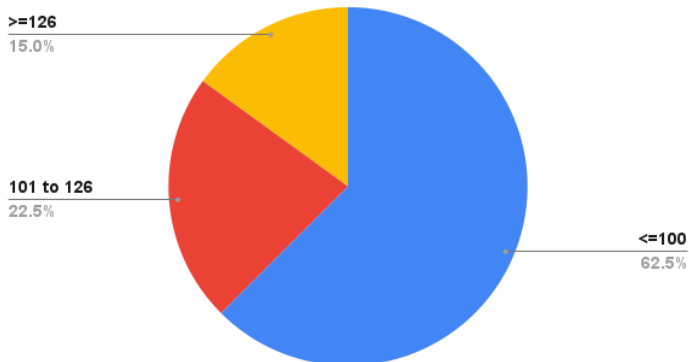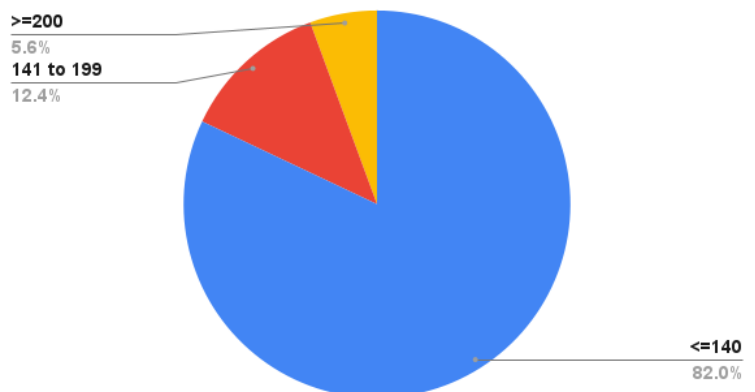
Conclusion

Many people are unaware of their risk status for developing obesity, hypertension, and diabetes. To this effect there are many persons who develop and have uncontrolled hypertension or diabetes. This is especially alarming as these are major risk factors for kidney disease. Although these tests were just screening tests and require further testing to confirm the participant's status of either being hypertensive or diabetic. It remains imperative that more of these campaigns are carried out to inform people of these chronic diseases and their potential complications if not managed properly.

Limitations

- Due to the Short time frame from the approval of the campaign to its execution, we were not able to liase with the Molyko Intergrated health center to have a personnel on ground with us. However, all participants with results of interest were referred to the Molyko intergrated health center for follow-up.

References

1. https://omronhealthcare.com/wp-content/uploads/3-series-upper-arm-blood-pressure-monitor-bp7100-im-en_3787112-0C.pdf
2. https://www.nhs.uk/common-health-questions/lifestyle/what-is-blood-pressure/
3. https://www.cdc.gov/diabetes/basics/getting-tested.html#:~:text=A%20fasting%20blood%20sugar%20level,higher%20indicates%20you%20have%20diabetes.

Appendix

Questionnaire

Demographic

Name	
Age	
Sex	___ Male _____Female
Phone No	
Occupation	
Number of Children	
Region of Origin	
Marital Status	__ Single __Married __Divorced __Widow/widower
Have you ever heard of chronic kidney disease before?	
Has anyone in your family ever had chronic kidney disease/been on dialysis?	
Are you a known diabetic or hypertensive?	___ NO _____YES (Diabetic, Hypertensive, BOTH)
If Yes for the above, are you on treatment ?	
Do you have a family history of diabetes or hypertension?	___ NO _____YES (Diabetic, Hypertensive, BOTH)
Do you have a heart condition?	___ No ___YES Specify;
Do you have a family history of heart disease?	___ No ___YES Specify;
Do you smoke?	___ No ___YES (Cigarettes, Shisha, Others)

Screening Section

Weight	
Height	
BMI (Kg/m2)	
Temperature	
Oxygen Level/PULSE	
Blood Pressure	Left arm: Right arm:
Blood Sugar	FBS: _____ (mg|dl) RBS: _____ (mg|dl)

Online Vet:_____