The International Atomic Energy Agency (IAEA) Body Composition Project in Mauritius

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THE BIOCHEMISTRY DEPARTMENT

IAEA SPONSORED PROJECTS

- From 1995 to 2007, the Biochemistry Department benefited from projects through the Nuclear Medicine Division of IAEA.

- *Projects implemented included* :

  -Setting up of Radioimmunoassay (RIA) unit for the assay of Thyroid hormones

  - Introduction of tumour marker assays using RIA technique

IAEA SPONSORED PROJECTS

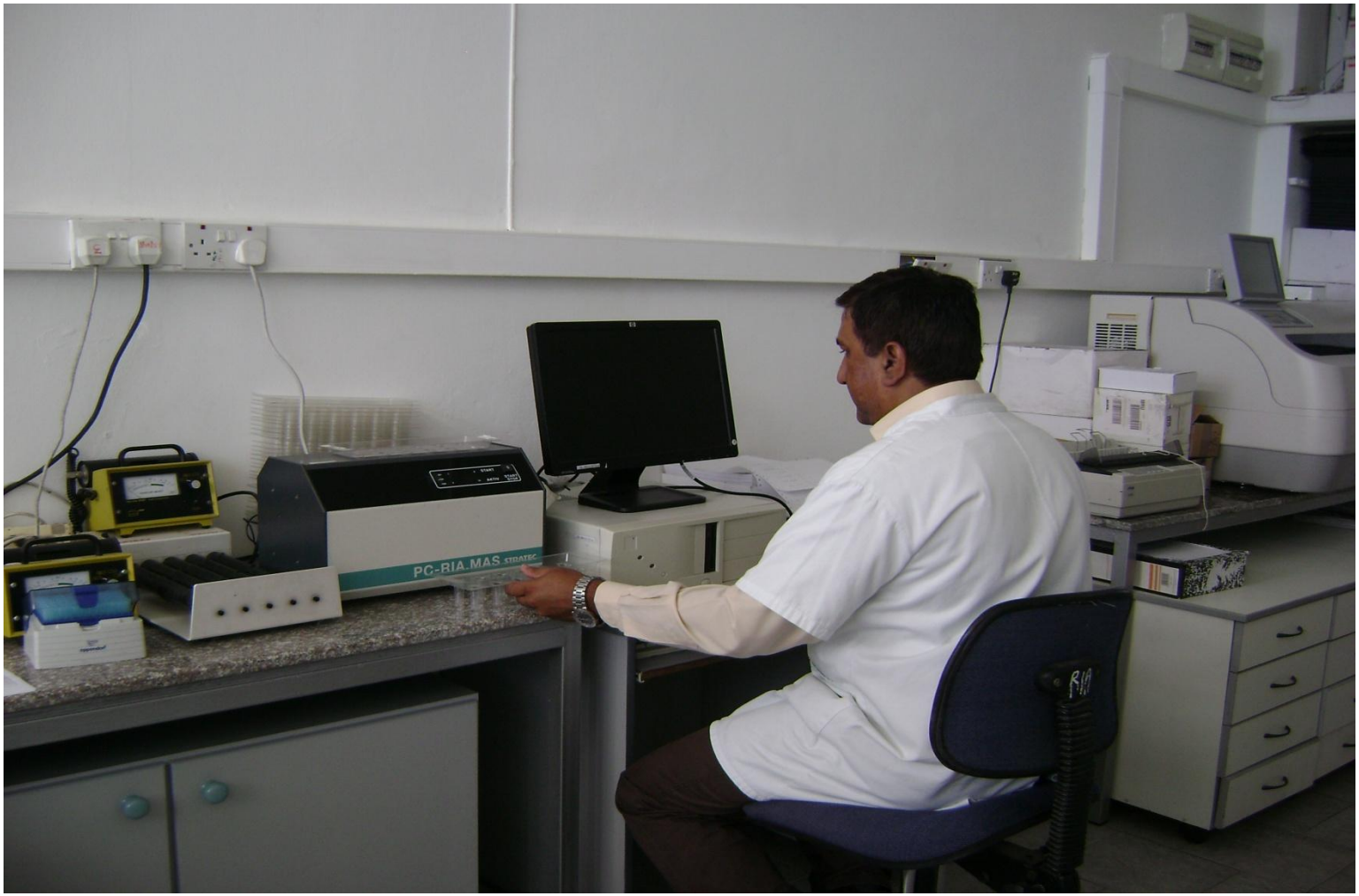
- Use of Insulin, C peptide and anti GAD 65 antibody for the Management of Diabetes

- Detection of renal complications in diabetic patients using the microalbumin test

- HbA1c as a marker for glycaemic control

Through the above projects , the Endocrinology and Human Metabolism unit was set up and the services are provided on a routine basis

The Radio Immunoassay Unit



Endocrinology and Human Metabolism Unit

Diabetes Care Unit- HbA1c Assays

Since 2009, the projects have been implemented through the Division of Human Health **Body Composition Projects**

- **Project 1. 'Assessing Health Risk Factors Associated with Diabetes in Mauritius'.**

- **Project objective**

- To assess body composition (body fat & fat-free mass) using stable isotope - by Deuterium dilution method.

- To evaluate the relationship between clinical markers of cardiovascular risks and body composition;

The outcome of this project will be presented in the next talk by Dr (Mrs) Hunma who took up this project as her PhD thesis

2. Coordinated Research Project

Nuclear techniques to assess body composition in children and adolescents as a risk factor in the development of chronic diseases

10 countries participated in this project

(Brazil, China, Cuba, Guatemala , India ,Malaysia, Mauritius, Mexico Morocco, Uruguay)

COORDINATED RESEARCH PROJECT

SCHOOL CHILDREN AND NUTRITIONIST COUNSELLING

Overall Objective of the study

To assess the body composition, and metabolic health of children and adolescents in Mauritius.

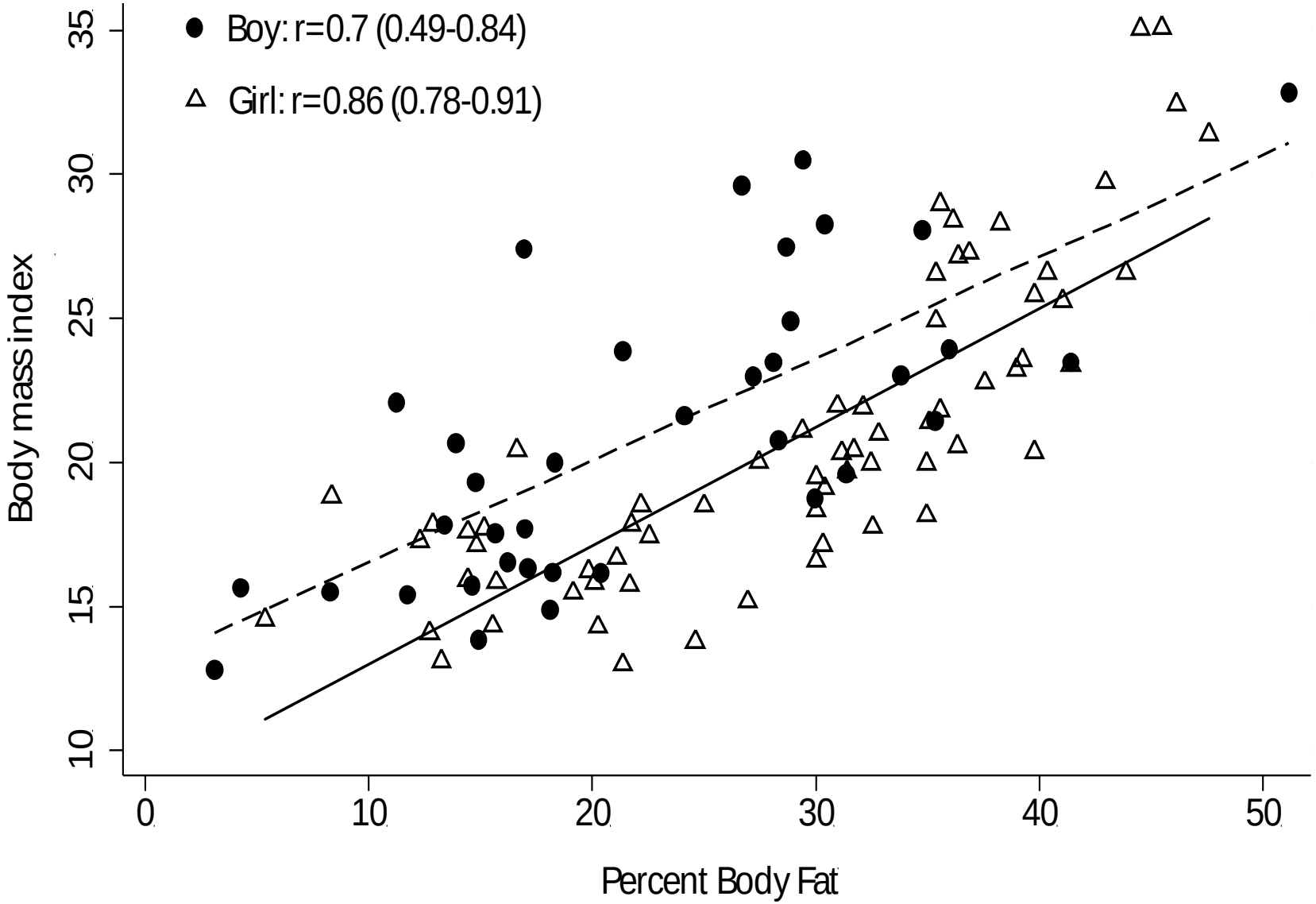
Specific Objectives

- To assess body composition by stable isotope techniques in children and adolescents (n=120)

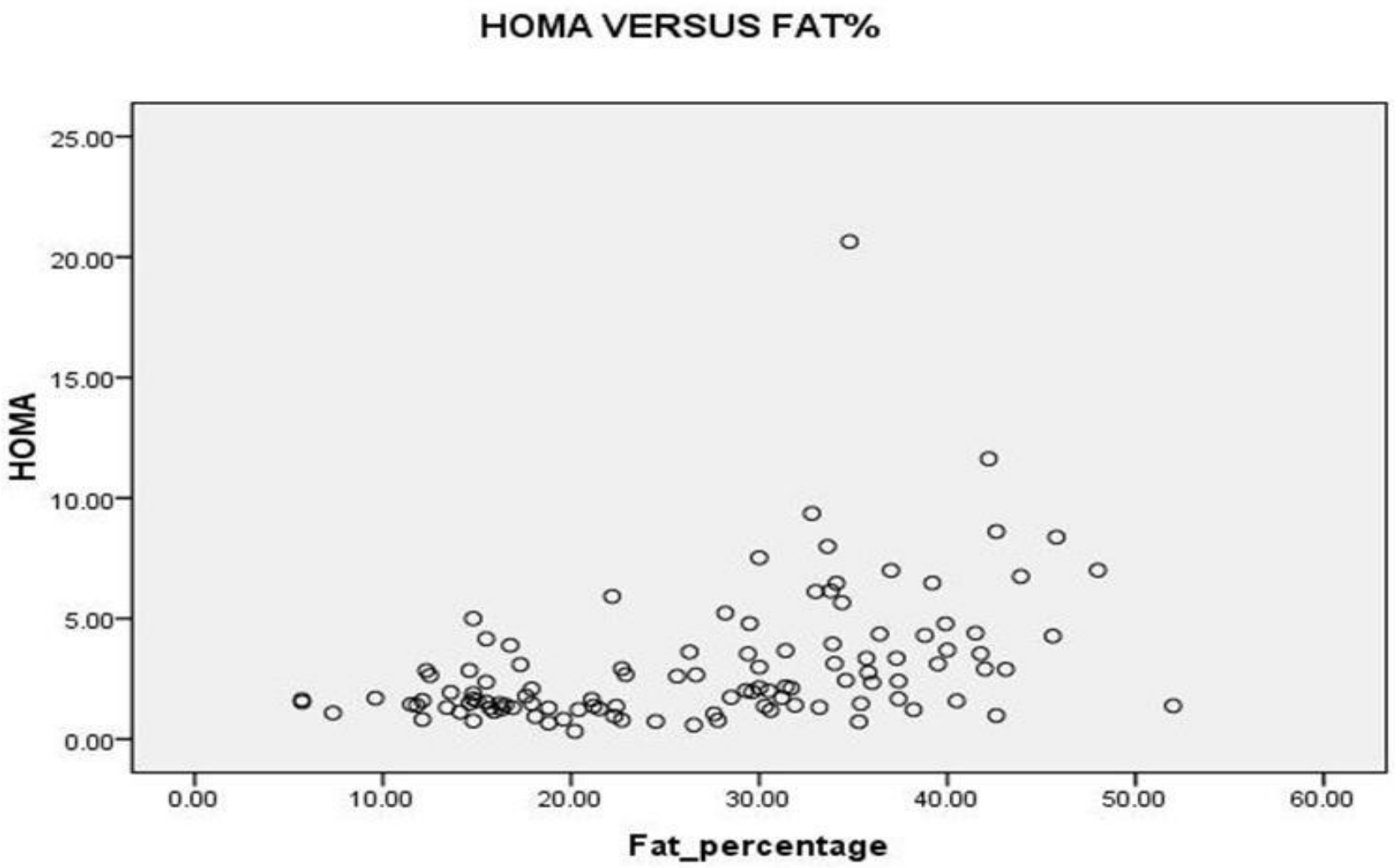
- To assess the associations between anthropometry, body composition, physical activity level and metabolic markers in normal weight, overweight and obese children and adolescents

Questionnaire Data: Indicates Sedentary Lifestyle

- 67.5% of the students eating in front of the TV
- <50% eating fruits and vegetables daily
- 30% consuming sugary drinks daily
- 80% of the teenagers travel to school either by bus or car
- 75% have less than 1hr Physical Education class **per week** at school.


Boy: r=0.7 (0.49-0.84)
Girl: r=0.86 (0.78-0.91)
Body mass index
10
15
20
25
30
35
0
10
20
30
40
50
Percent Body Fat

Scatter plot of HOMA IR against % Body Fat



Conclusion

(Preliminary data & analysis)

- There is a strong correlation between increased body fat% and Insulin resistance in Mauritian adolescents

- Thus, the risks for developing Diabetes & Cardiovascular diseases requires consideration early in life.

- Questionnaire data clearly indicates a sedentary lifestyle

3. Regional Africa Project (RAF6042)

Applying nuclear techniques to design and evaluate interventions to reduce obesity and related health risks

- ***Project carried out in 11 countries in Africa***

*(Tunisia, Morocco, Senegal, Benin ,Mali , **Mauritius** , Ghana , Kenya, Uganda, Tanzania, Namibia)*

-150 children from 4 public primary schools were randomly selected (age 8-11 yrs)

-Body composition , anthropometry and physical activity measurements were carried out

Project Output

1. More accurate information on overweight, obesity, total energy expenditure and physical activity level is established in the Africa region

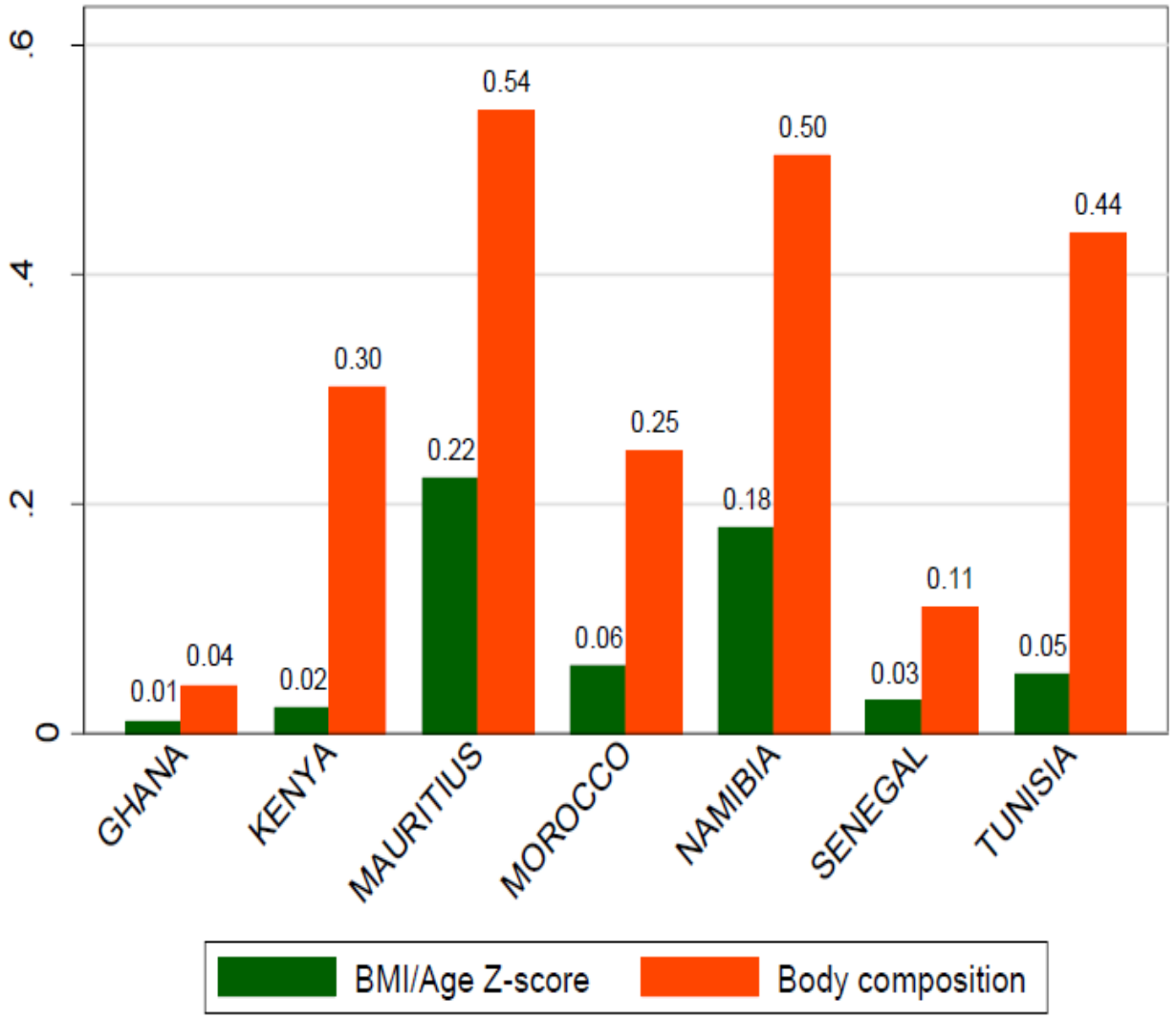
2. Project results are shared with national health authorities and stakeholders

3. Capacity in the use of stable isotope techniques to assess body composition and energy expenditure is strengthened in the Africa region

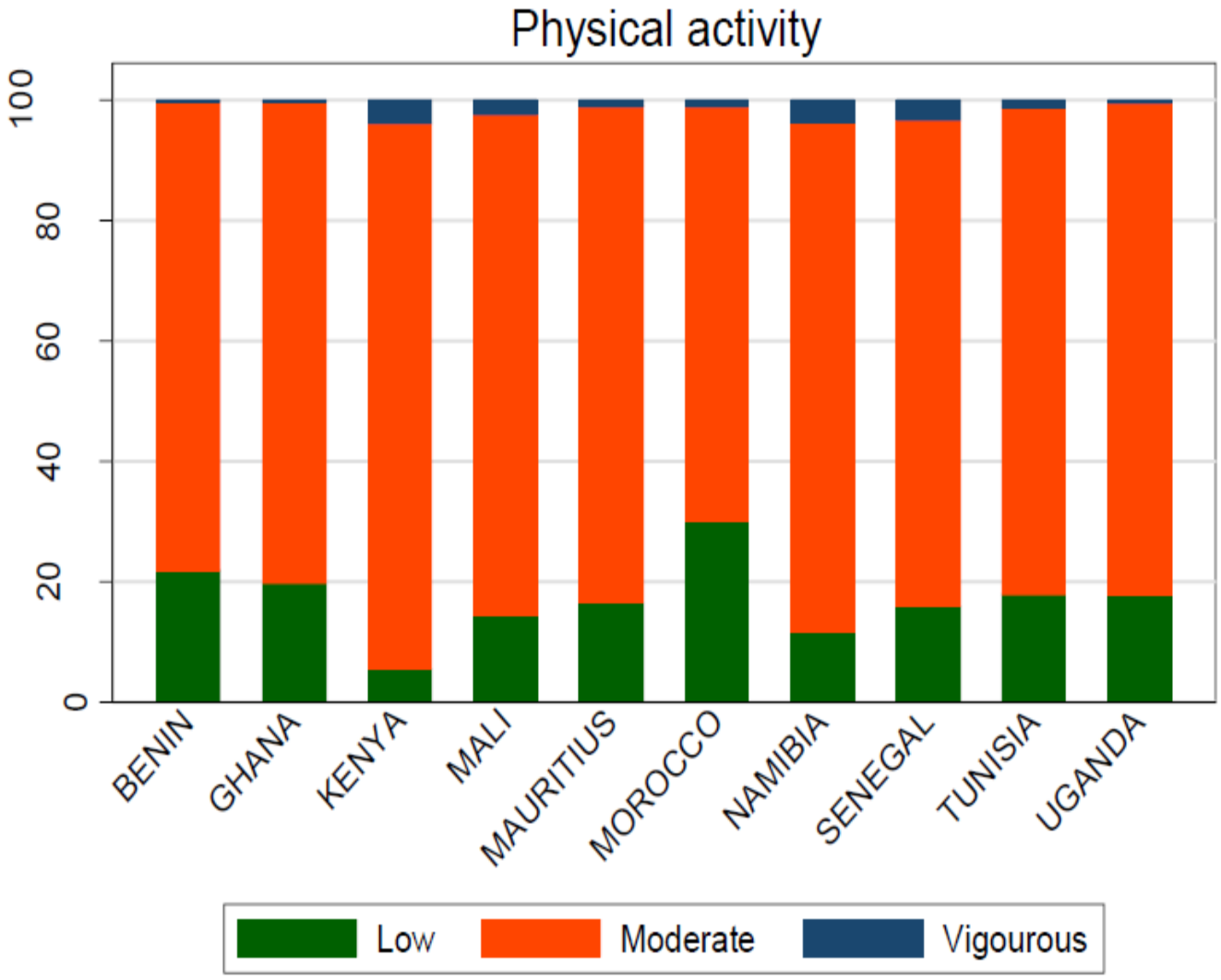

MAURITIAN KIDS


S CLERK'S OFFICE
Food groups
Food for energy
Food for growth
Food for health
STD I
PEACE
HUMILITY
DISCIPLINE

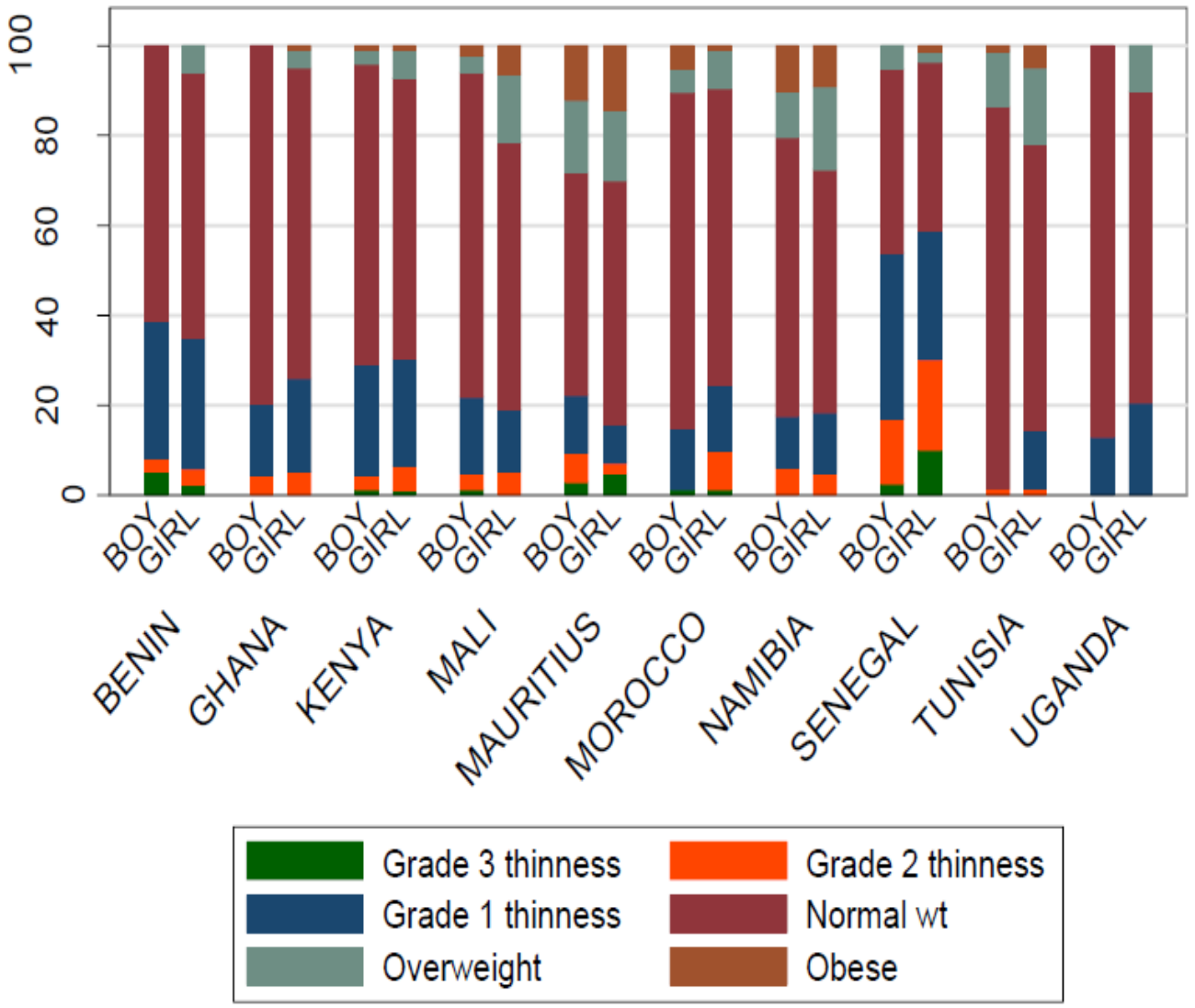
Obesity versus Obesity



Physical activity scores



Anthropometry: BMI categories



4. Monitoring of Obesity, Insulin Resistance and Cancer Risk in Women

Overall Objective:

To assess obesity and insulin resistance as risk factors for breast and endometrial cancers in Mauritian women

Baseline data to establish intervention programme for the control and prevention of these cancers in Mauritius

Implementation strategy

- Recruit participants who have been diagnosed with breast/ endometrial cancer and record medical history using a designed questionnaire
- Recruit participants with PCOS and a control group
- Body Composition by FTIR analysis and DEXA.
- Measurement of biochemical markers including leptin, insulin and IGF.
- Anthropometry including Bio impedance and blood pressure measurements.

Expected output

Baseline survey to assess the associations between obesity and insulin resistance with risk factors for breast and endometrial cancers in Mauritius.

This project is ongoing and data collection in process- project ends by December 2017

Thank You

- The IAEA for accepting our project proposals.

- Special thanks to Professor A.G. Dulloo of the University of Fribourg for a fruitful collaboration, advice and continuous support

- Thanks to the Ministry of Education

- The Ministry of Health and Quality of Life for approving the research proposals & providing necessary facilities to carry out the projects.