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THE 8-YEAR INCIDENCE OF OBESITY AND TYPE 2 DIABETES IN FIVE AFRICAN-ORIGIN POPULATIONS.

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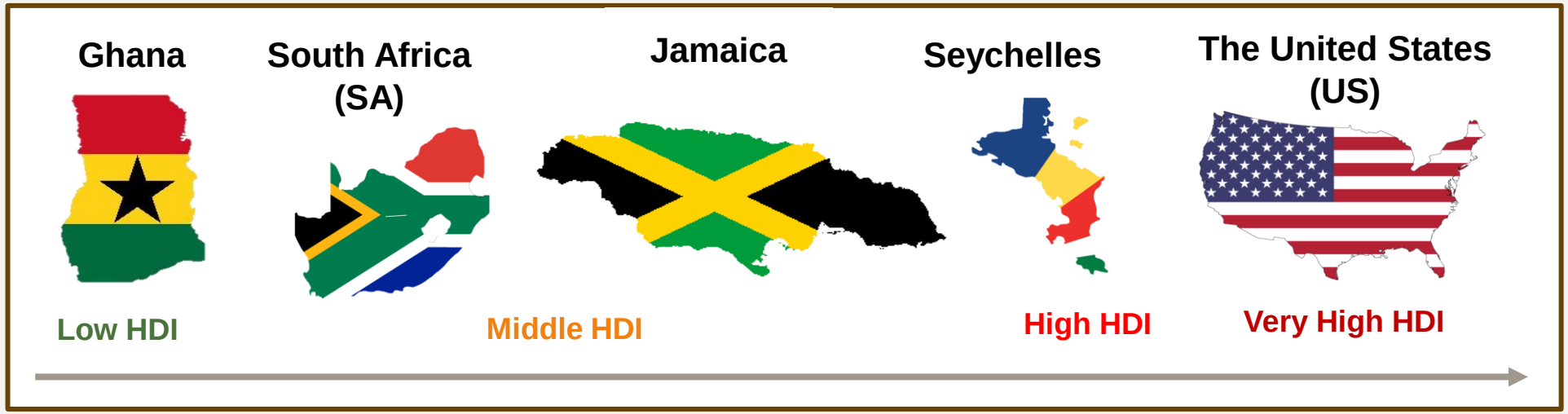
INTRODUCTION

- The global increase in **obesity and type 2 diabetes** (T2D) have become pandemics, with escalating prevalences seen particularly in low-middle-income countries (LMIC).
- **Aim**: To explore the **incidence of obesity and T2D** among five diverse African-origin populations between 2009 and 2018-2019. The five countries include:



- **Hypothesis**: The country of origin will be **significantly associated with obesity and T2D incidence**, with the cohorts from **LMICs experiencing a higher incidence of obesity and T2D** compared to cohorts from high-income countries (HIC)

METHODOLOGY

The **Modeling of Epidemiological Transition Study** (METS) enrolled **2,506 African-origin participants**, (25-45 years) in 2009 (baseline) with a follow-up study (METS-Microbiome) in 2018-2019

732 participants had complete measurements from both baseline and follow-up.

Research visits included **anthropometrics, body composition measurements, social history, socio-demographics and health questionnaires, physical activity** by accelerometer and **clinical measurements**.

BMI > 30kg/m² considered as **obese**

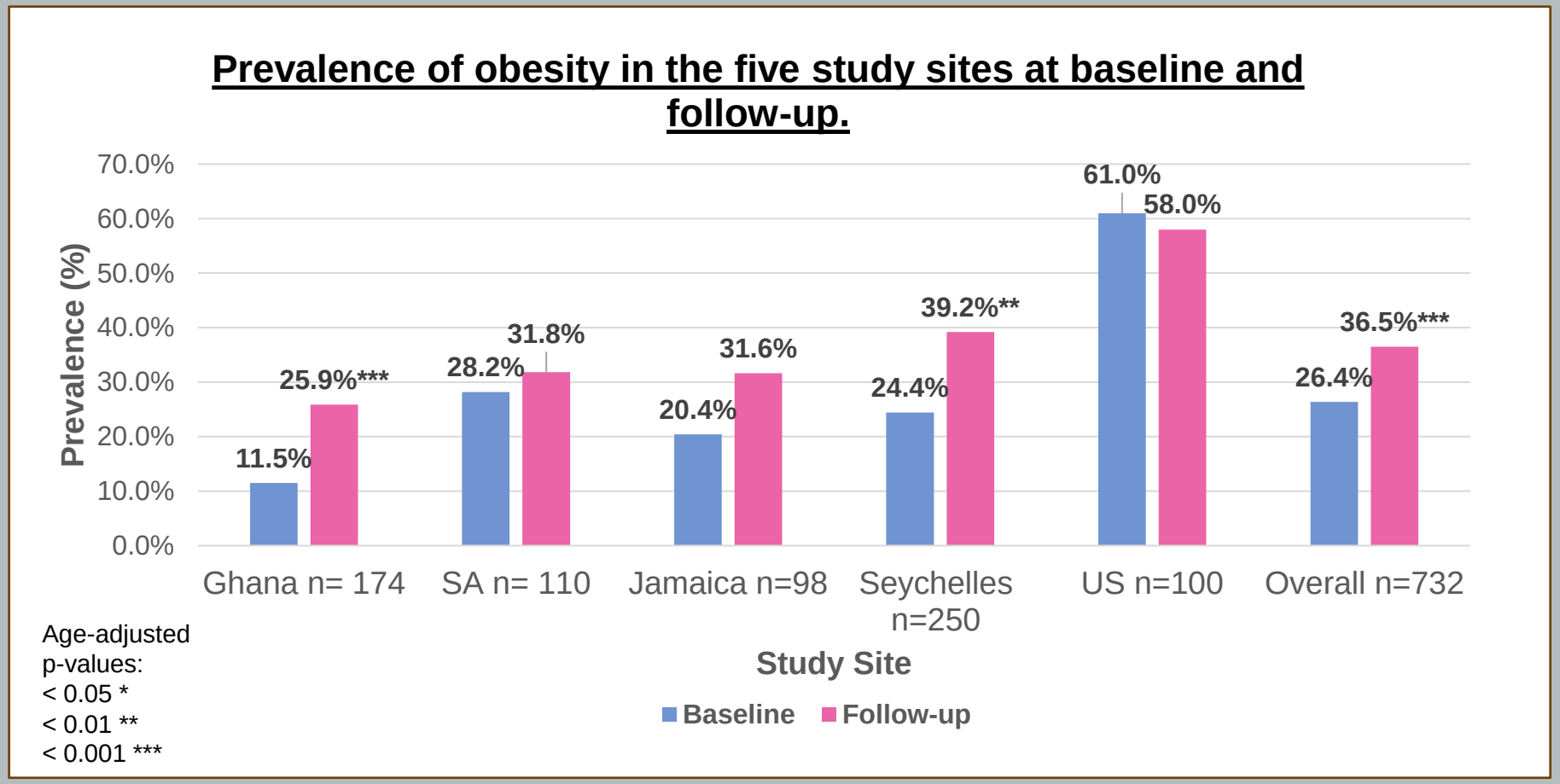
Participants with a fasting plasma glucose ≥7mmol/L (≥126 mg/dL) was considered **diabetic**

Generalised Estimating Equation (GEE) regression models - to identify the associated risk factors (at baseline) of obesity and T2D, respectively.

Interaction term (follow-up length *site) was included to examine difference of obesity and T2D in the different sites over time.

Covariates: baseline age, sex, fat mass (FM), waist circumference (WC), obesity, moderate to vigorous physical activity (MVPA), T2D, hypertension, alcohol consumption, smoking, study sites and follow-up time.

RESULTS: OBESITY



P-values comparing baseline and follow-up adjusted for age

PREVALENCE OF OBESITY

- Significant prevalence increase observed **overall with 38.3%**
- **Ghanaians with 125% increase** from 11,5% to 25,9% (p<0,001)
- **Seychellois with 60.7% increase** from 24,4% to 39,2% (p<0,01)
- **US with a 4,9 % insignificant decrease from 61% to 58%** (p>0,05)

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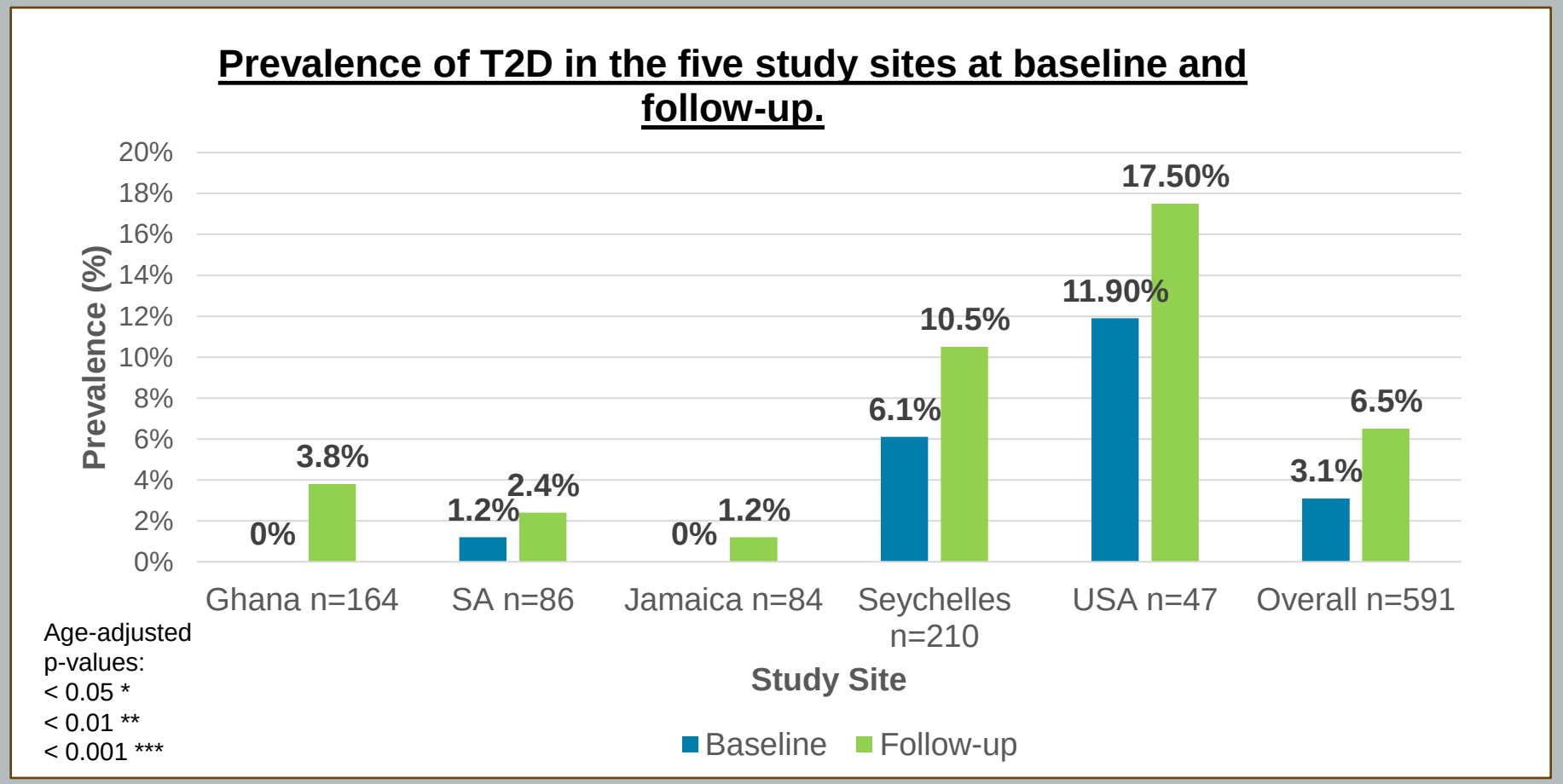
RESULTS: TYPE 2 DIABETES



P-values comparing baseline and follow-up adjusted for age

PREVALENCE OF T2D

- No significant prevalence increases observed (p>0.05)
- **Overall increase** in T2D prevalence from 3,1% to 6,5% (**109,7% increase**).
- US the **greatest T2D prevalence** at both baseline and follow-up.
- **No diabetes cases** recorded in Ghana and Jamaica

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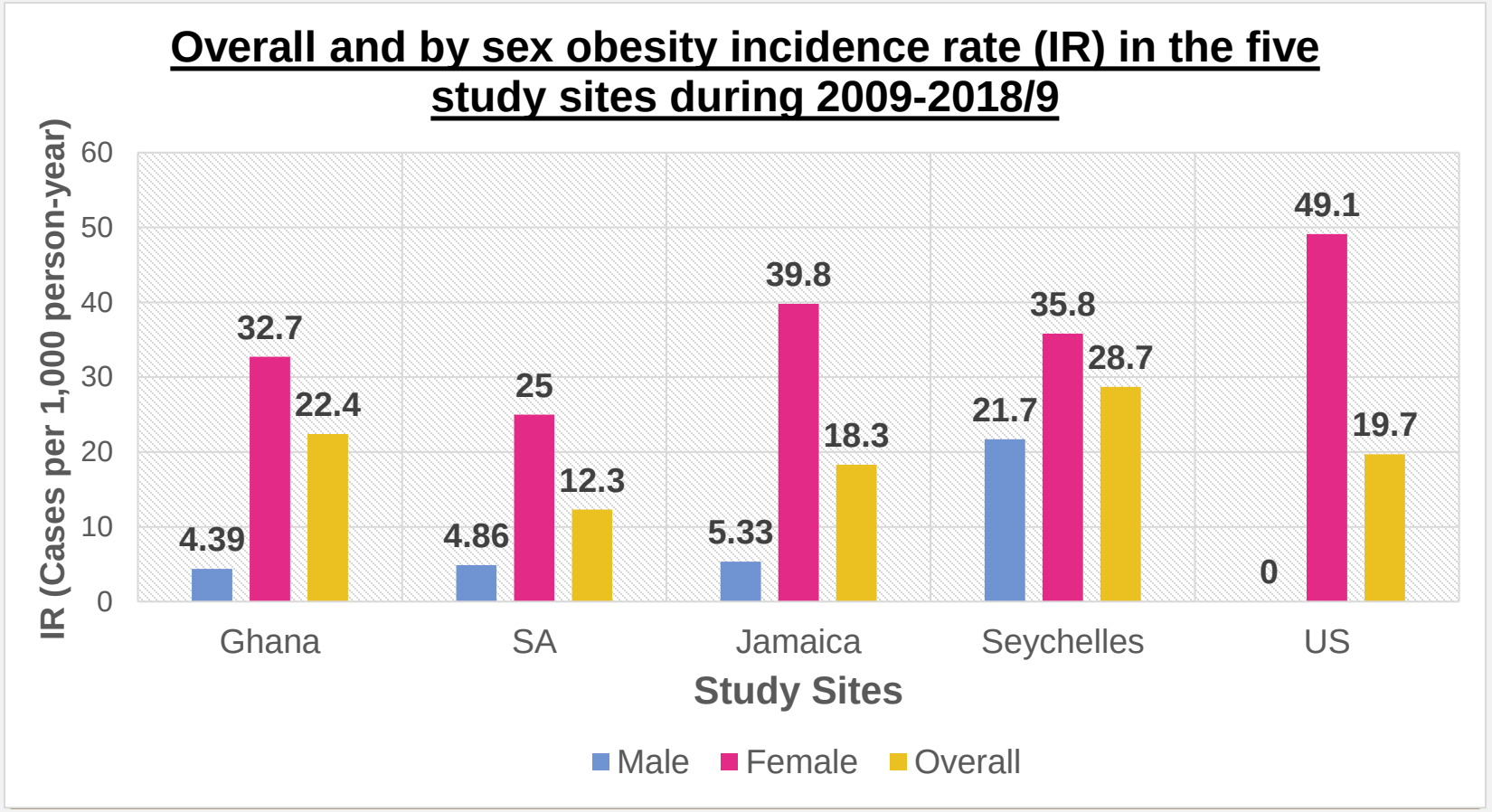
OBESITY

- Significant obesity predictors included being **females** (OR 3.27), **WC** (OR 1.12) and **FM** (OR1.14), and **follow-up time** (OR 3.43) (p<0.001).
- The GEE interaction term for follow-up length and site was significant for:
  - **Ghanaians** with **6.62 times the odds of obesity…**
  - **Jamaicans** with **4.57 times the odds of obesity…**
  - **Seychellois** with **4.31 times the odds of obesity…**

at follow-up compared to baseline, respectively, (p=0.008 and p=0.005, respectively).

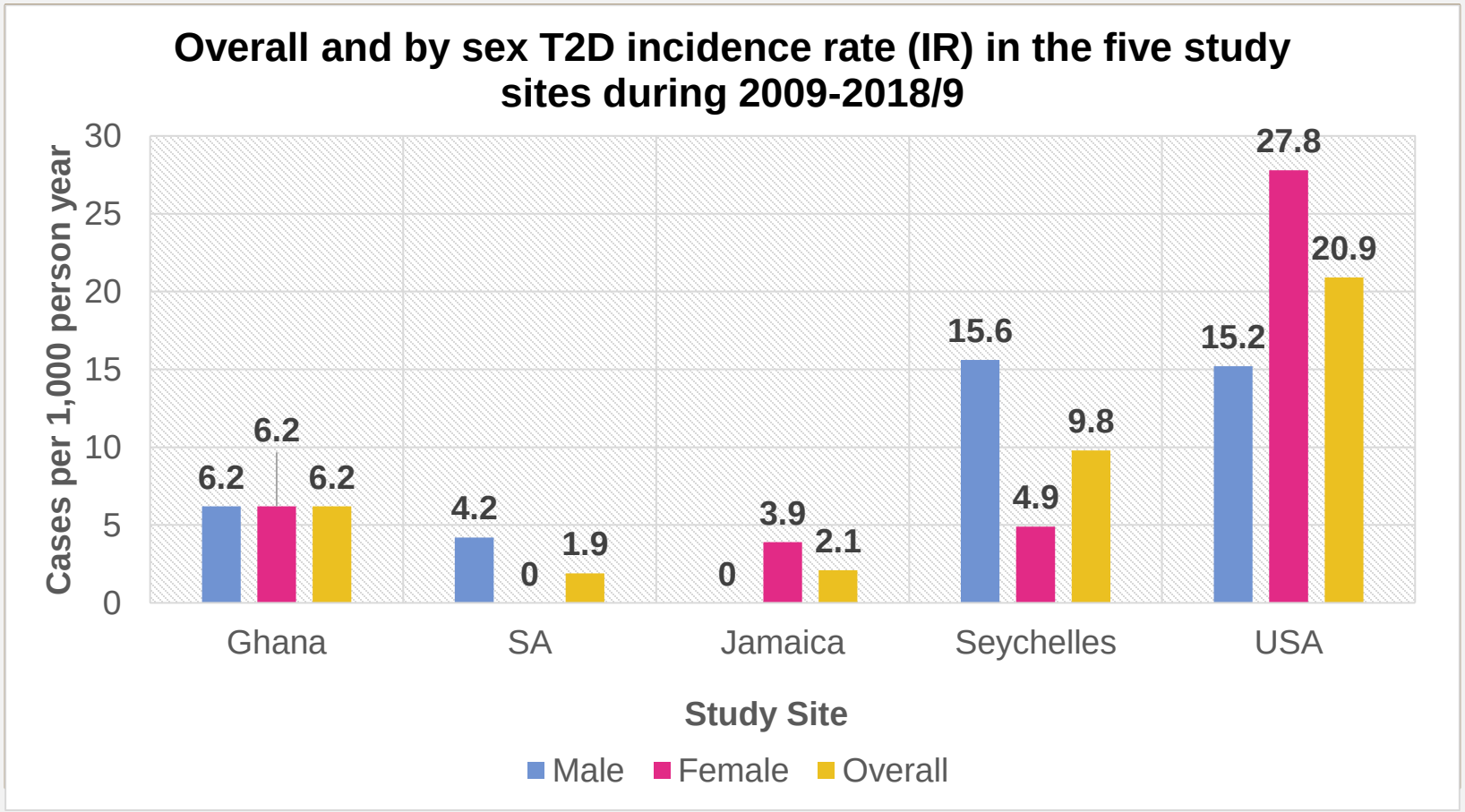
Highest obesity IR seen among the females.



TYPE 2 DIABETES

- Significant T2D predictors included being:
  - **Age** (OR 1.07) and
  - **Obesity** at baseline(OR 3.12) and
  - **Hypertension** at baseline (OR 2.26) were significant T2D predictors ($p<0.05$)
  - **Follow-up time**, with **2.3 times** (95% CI 1.42-3.71] higher odds of T2D at follow-up compared to the start of the study

- **Greatest T2D IR** among the US participants - fewer sample size could greatly contribute to the higher IR.



CONCLUSION

Age was a contributing factor to the development of both diseases.

Countries that undergo transition may be increasing in obesity prevalence, which is could be attributed to factors such as **urbanisation and the nutrition transition**.

These rising rates of obesity and T2D in LMICs, highlight the emergence of NCD in regions already overwhelmed and burdened by infectious diseases.

These findings support urgent NCD responsive interventions and further research to address the evolving epidemiological landscape and tailored to every country region.

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