World Congress of Epidemiology 2024

Trends and transitions in non communicable disease risk factors: data, analytics and implications

NCD·RisC
Risk Factor Collaboration

Data sources in South Asia

7 countries
122 studies (1952-2022)
- Anthropometrics
- Blood pressure
- Glucose
- Lipids

- Afghanistan
  - National Nutrition Survey 2013
  - STEPS 2018
- Bangladesh
  - Seven rounds of DHS 1996-2018
  - STEPS 2009/10, 2013 & 2018
  - National Nutrition Surveillance 2018-19
- Bhutan
  - STEPS 2014 & 2019
- Nepal
  - Five rounds of DHS 1996-2016
  - Five rounds of STEPS 2005-2019
  - The Population Based Prevalence of Selected Non-Communicable Diseases In Nepal 2017
- Pakistan
  - National Health Survey of Pakistan 1990-1994
  - STEPS 2005 & 2014
  - National Nutrition Survey 2011
  - DHS 2012/13 & 2017/18
  - National Diabetes Survey of Pakistan 2016/17
- Sri Lanka
  - Sri Lanka Diabetes, Cardiovascular study (SLDCS) 2005/06
  - STEPS 2006, 2014, 2021
  - Global School-based Student Health Survey 2019
  - The Sri Lanka Health and Ageing Study (SLHAS) 2018/19
- India
  - 7 rounds of National Nutrition Monitoring Bureau rural survey 1975- 2016
  - DHS 1998/99, 2005/06, 2015/16 & 2019-2021
  - India Human Development Survey 2004/05 & 2011/12
  - WHO Study on global AGEing and adult health (SAGE) 2007/08
  - 6 rounds of ICMR-India Diabetes (INDIAB) Study 2008-2020
  - Body Mass Index, Social Conditions and Environmental Effect on High Blood Pressure among the Adolescent School Children 2011/12
  - District Level Household and Facility Survey (DLHS) 4 2012-2013
  - Processed and non-processed foods 2012/13
  - Annual Health Survey 2014
  - National Noncommunicable Disease Monitoring Survey (NNMS) 2017/18
  - Longitudinal Aging Study in India 2019-2021

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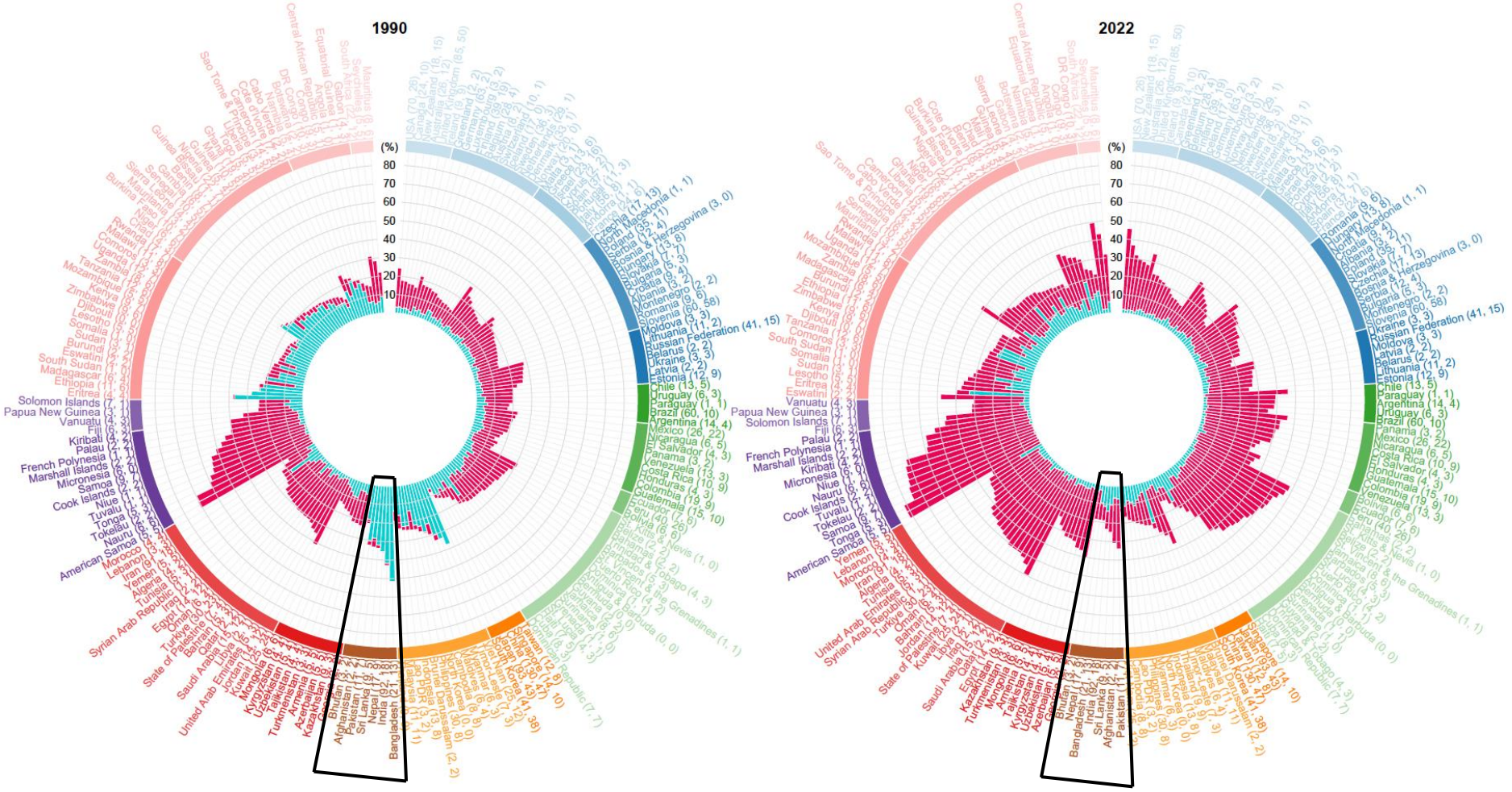
Double burden of obesity and underweight across women in 1990 and 2022



Underweight

Obesity

High-income English-speaking countries
Northwestern Europe
Southwestern Europe
Central Europe
Eastern Europe
Southern Latin America
Central Latin America
Andean Latin America
The Caribbean
East Asia and the Pacific
Southeast Asia
South Asia
Central Asia
Middle East and north Africa
Polynesia and Micronesia
Melanesia
East Africa
West Africa
Central and southern Africa
Other sub-Saharan Africa

NCD Risk Factor Collaboration (NCD-RisC) *Lancet* 2024

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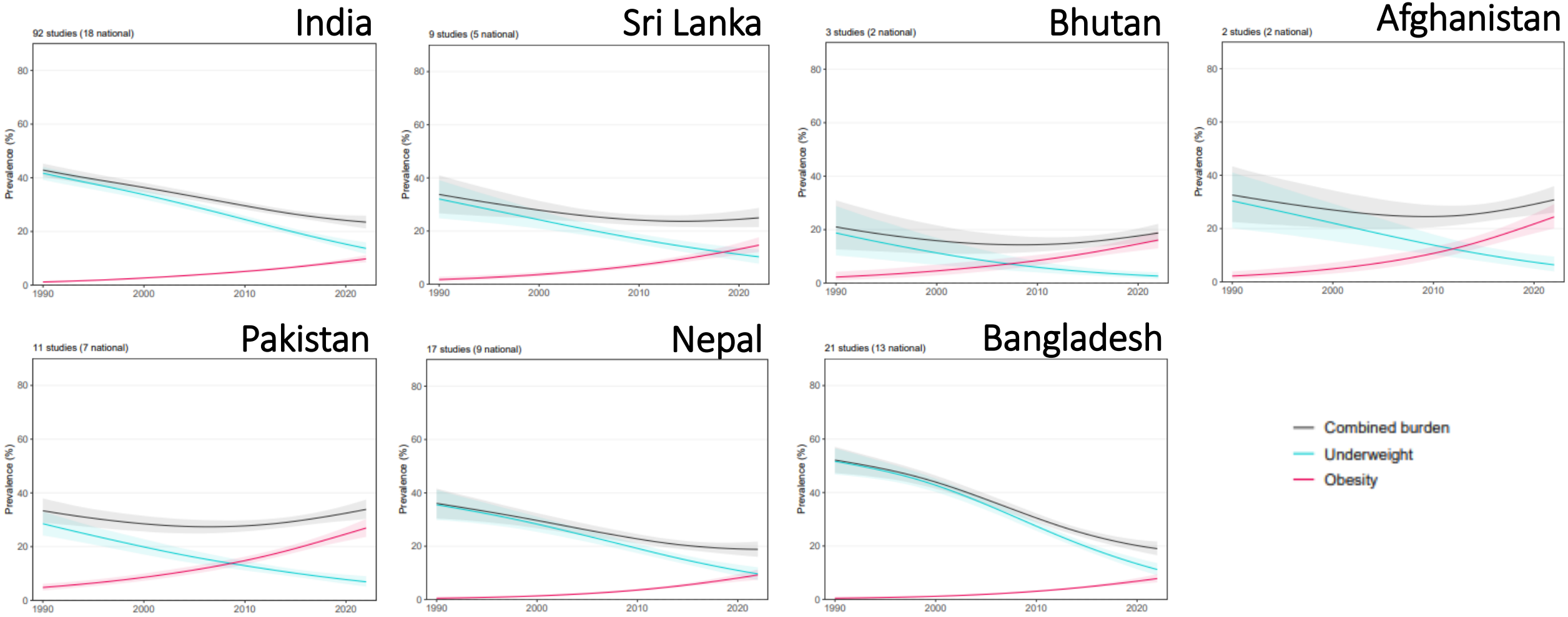
Transition from underweight dominance to obesity dominance across women in South Asia



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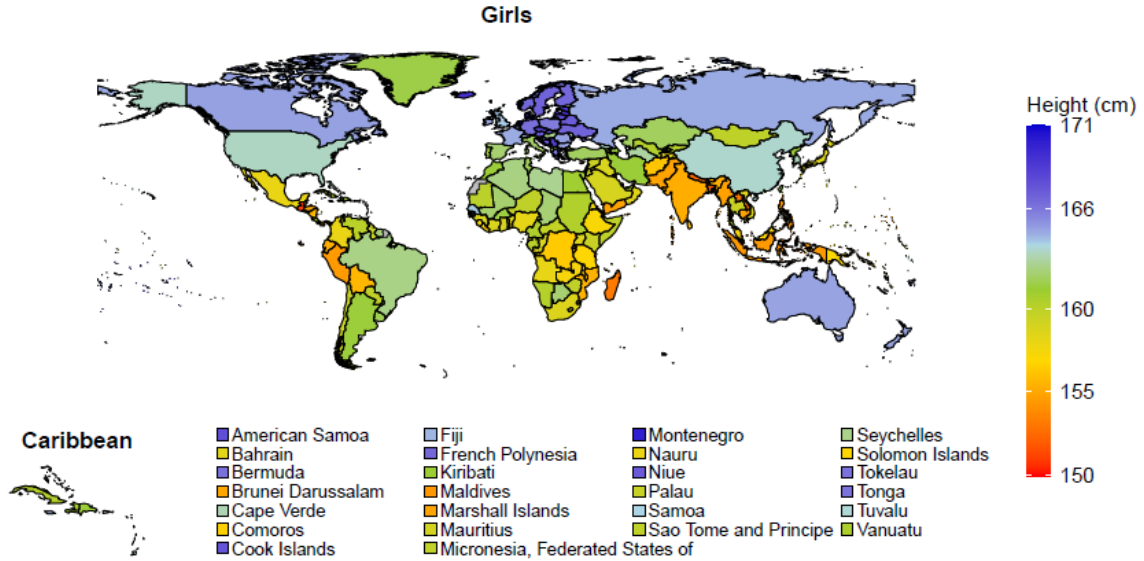
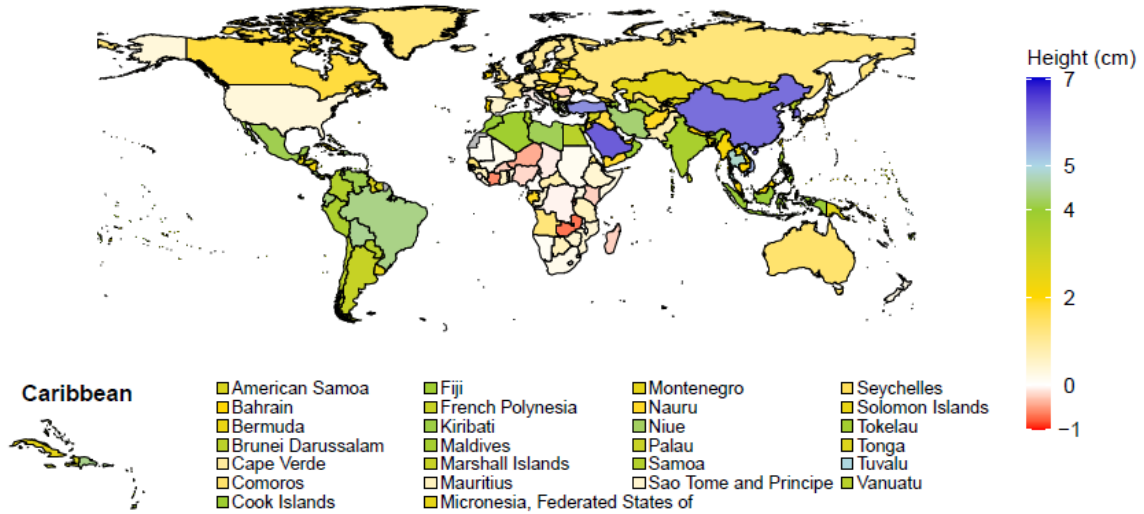
South Asia had one of the shortest heights in the world despite improvement over time

Mean height
at 19yrs
in 2019



Change in mean
height at
19yrs
from 1985 to 2019



NCD Risk Factor Collaboration (NCD-RisC) *Lancet* 2020

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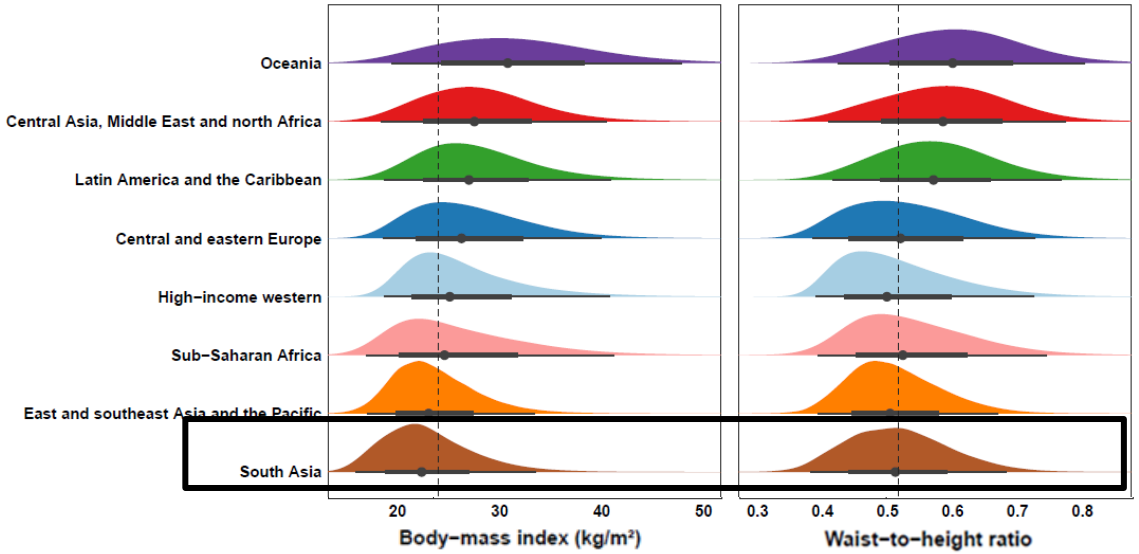
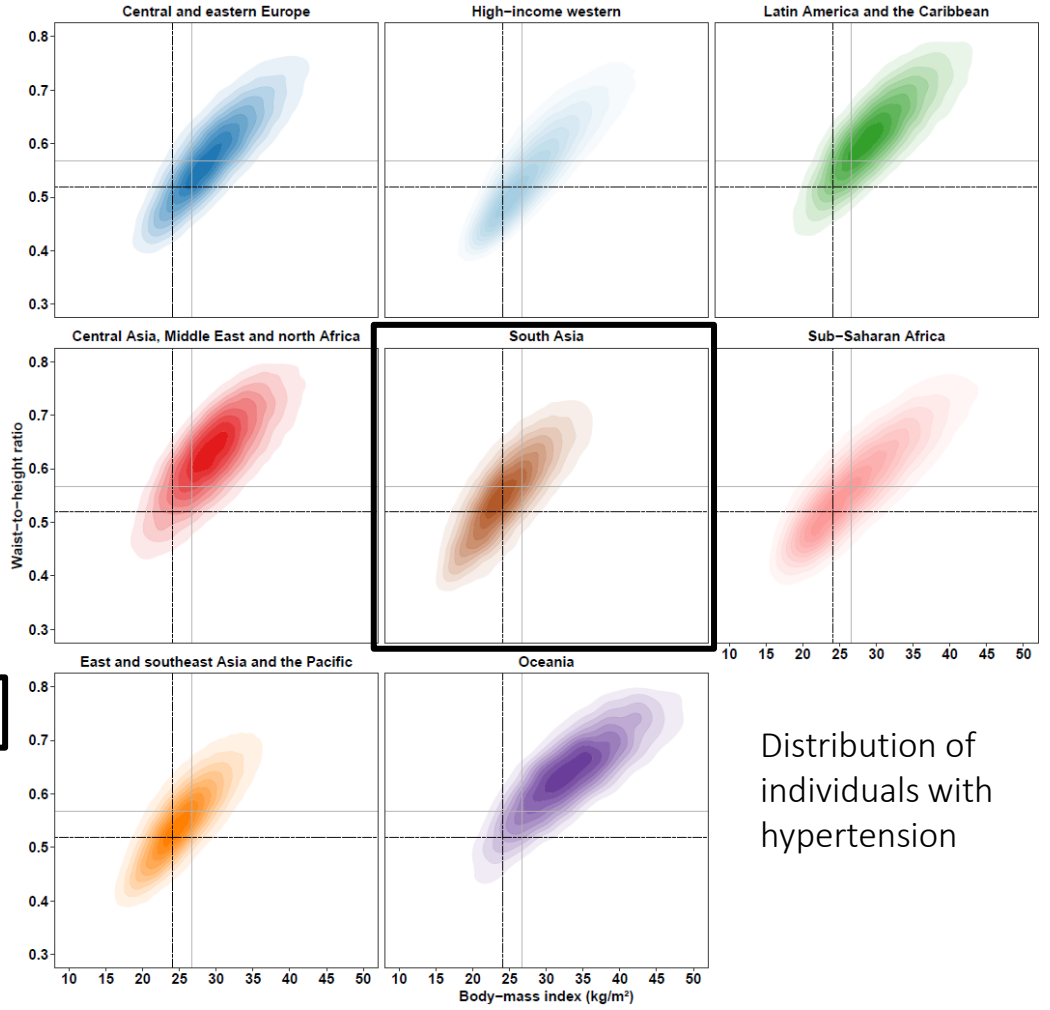
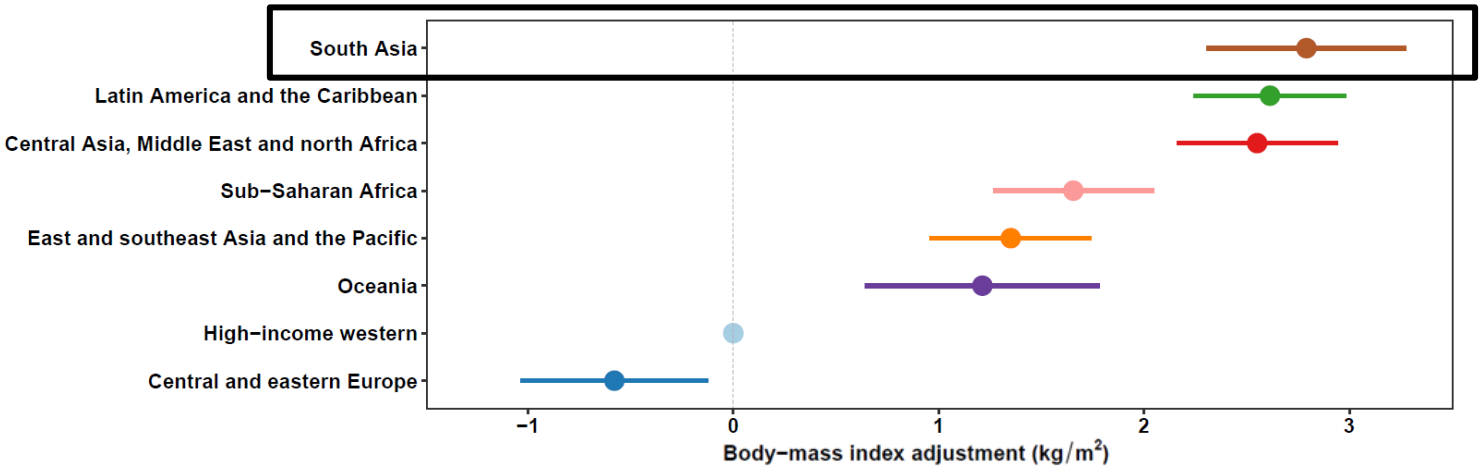
Regional variations in WHtR remain after adjusting for BMI amongst women







Distribution of individuals with hypertension

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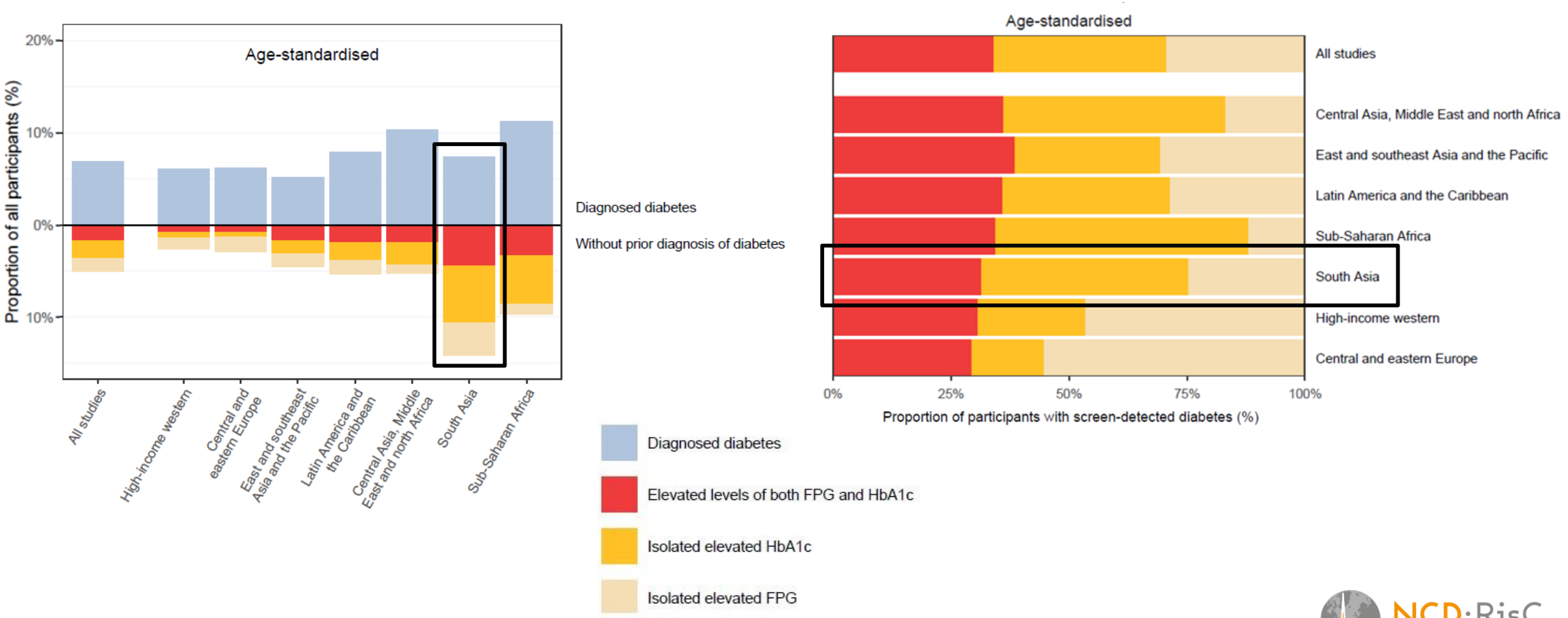
Variations in diabetes diagnosis and prevalence based on fasting glucose and haemoglobin A1c



NCD Risk Factor Collaboration (NCD-RisC) *Nature Medicine* 2023

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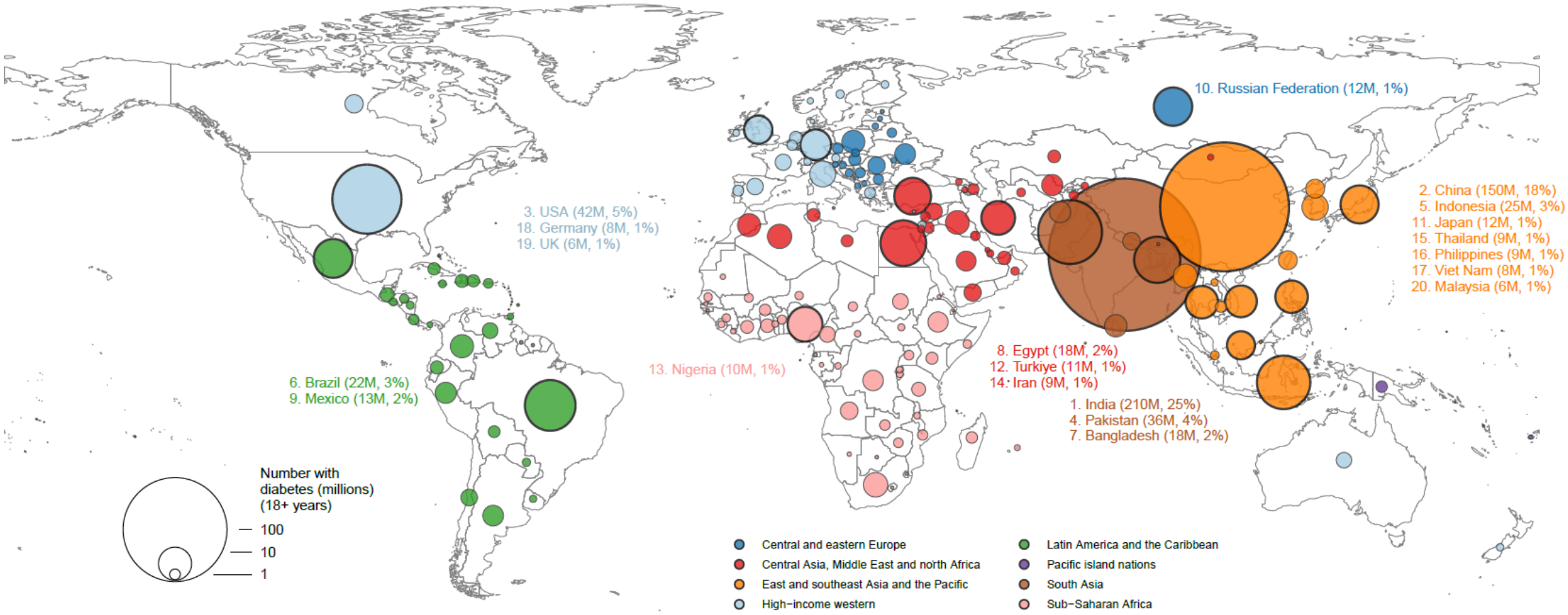
33% of women and men with diabetes worldwide lived in South Asia in 2022



Fasting plasma glucose ≥7.0 mmol/L, HbA1c ≥6.5 % or taking medications for diabetes

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ICMR - INDIA DIABETES [ICMR-INDIAB] STUDY

Largest epidemiological study on diabetes in India

Total Sample Size, n=113,043

Funded by: Indian Council of Medical Research (ICMR) & Department of Health Research, Ministry of Health, Government of India

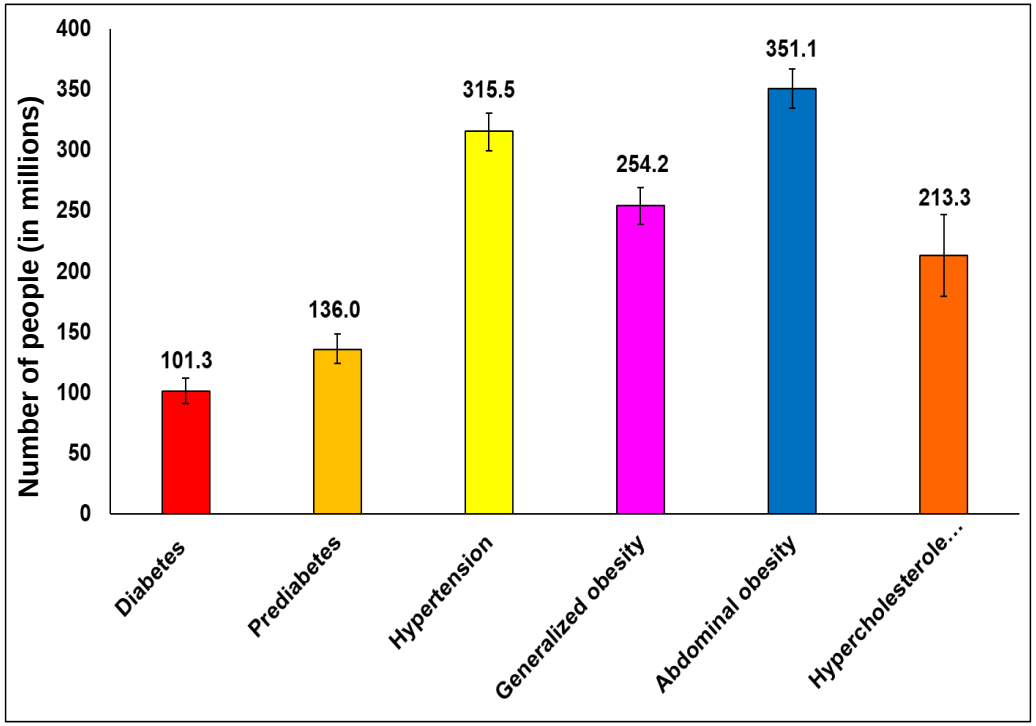
Study design: Cross-sectional, door to door survey

Study subjects: Adults aged ≥20 years

States surveyed: 28 states + 2 union territories + National Capital Territory of Delhi

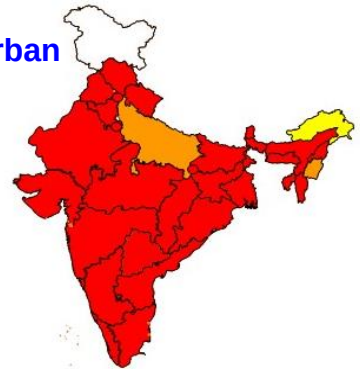
Sample size: 4000 representative samples from each State/UT (1,200 Urban & 2,800 Rural)

Projections for metabolic disease burden in India (Number in Millions)

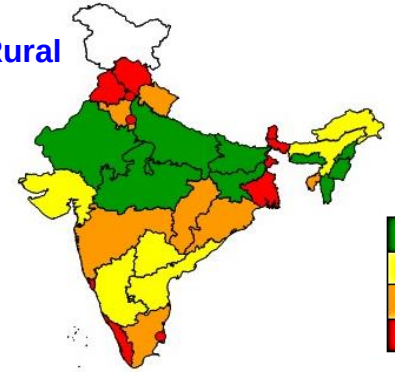


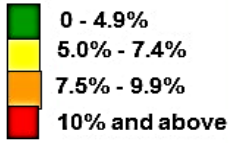
Overall

Urban



Rural





Anjana RM et al for ICMR – INDIAB Study Group, Lancet Diabetes Endocrinol. 2023

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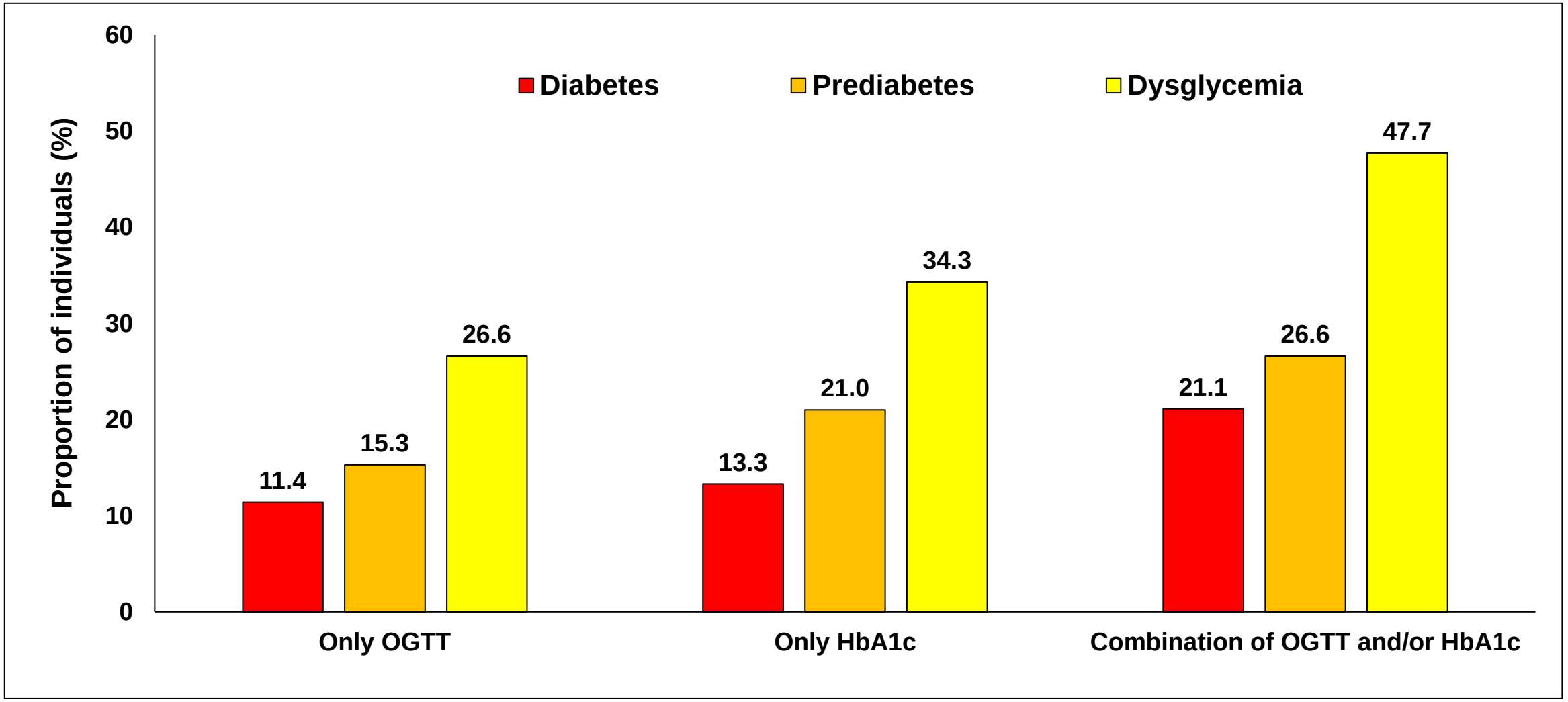
ICMR - INDIA DIABETES [ICMR-INDIAB] STUDY

Prevalence of diabetes, prediabetes and dysglycemia based on three criteria



Anjana RM et al for ICMR – INDIAB Study Group,
Lancet Diabetes Endocrinol. 2023

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Conclusion

- The combined burden of underweight and obesity has increased in most countries, while underweight and thinness remain prevalent in South Asia.
- The increase in double burden was driven by increasing obesity, leading to a transition from underweight dominance to obesity dominance.
- South Asia had one of the shortest heights in the world & had higher waist-to-height ratio at similar BMI.
- Proportion of undiagnosed diabetes was highest in South Asia (66%) as compared to 30% in high-income western countries.
- Isolated elevated HbA1c was more common than isolated elevated FPG.
- The ICMR-INDIAB study highlights the enormous burden of NCDs faced by India.
- Compared to OGTT (11.4%), the prevalence of diabetes was higher when diagnosed using HbA1c (13·3%) and highest when using a combination of OGTT and HbA1c (21.1%).
- Diabetes definitions using HbA1c in addition to OGTT for diagnosis led to nearly half the population being diagnosed with dysglycaemia.

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