

Adolescent BMI shifts after a whole-of-government, whole-of-society intervention in Bangladesh

D4N 2025

Meghna Chakravarty¹, Md. Mokbul Hossain¹, Ali Ahsan¹, Tanmoy Sarker¹, Sharmin Shapla¹, Sakib Rahman¹, Fahmida Akter¹, AHM Enayet Hussain², Malay Kanti Mridha¹

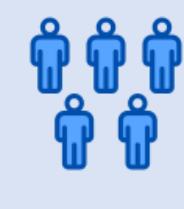
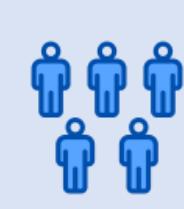
¹Centre for Non-communicable Diseases and Nutrition, BRAC James P Grant School of Public Health, BRAC University, Dhaka, Bangladesh

²Sylhet Medical University, Sylhet, Bangladesh

BACKGROUND

- Adolescent malnutrition in Bangladesh reflects a double burden, with persistent undernutrition alongside rapidly rising overweight and obesity (Tariqujaman et al., 2022).
- In response to growing NCD risks, the Government of Bangladesh introduced a Multisectoral Action Plan (MAP) in 2018, promoting a whole-of-government, whole-of-society (WG-WS) approach.
- This study implemented a package of non-communicable interventions in Birganj, Bangladesh adopting the (WG-WS) approach.
- This multisectoral multicomponent intervention model included a nutrition focused component that enabled us to assess its impact on the changes in body mass index (BMI) of adolescents.

METHODS

 Study design: Quasi-experimental study	 Study site: Birganj sub-district, Dinajpur, Bangladesh
 Study population: Adolescents aged 10-19 years old, living in Birganj	 Sampling: Multi-stage cluster sampling
Data collection: Data collection involved face-to-face interviews using structured questionnaires on diet, physical activity, and household factors, alongside physical measurements (height, weight, waist circumference) to calculate BMI.	
 Data analysis: Descriptive analysis and McNemar's test using STATA 17.0 to assess changes in underweight, normal and overweight/obesity.	

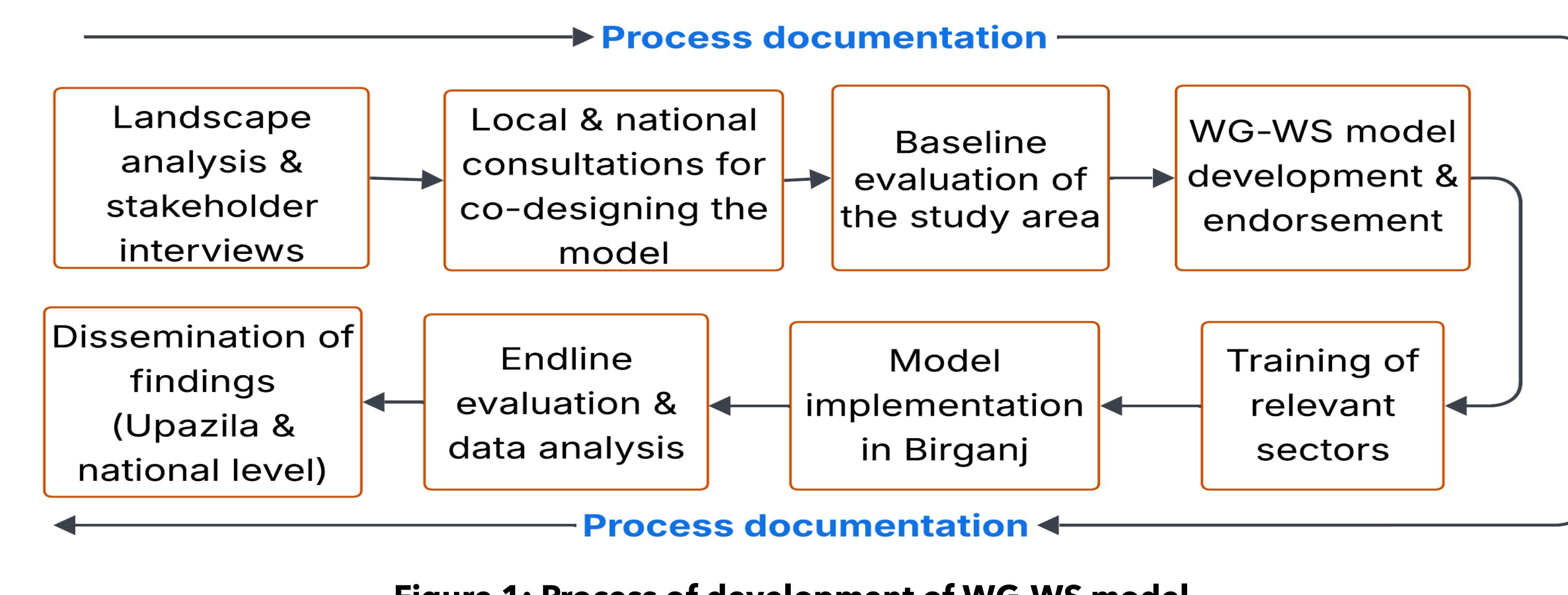


Figure 1: Process of development of WG-WS model

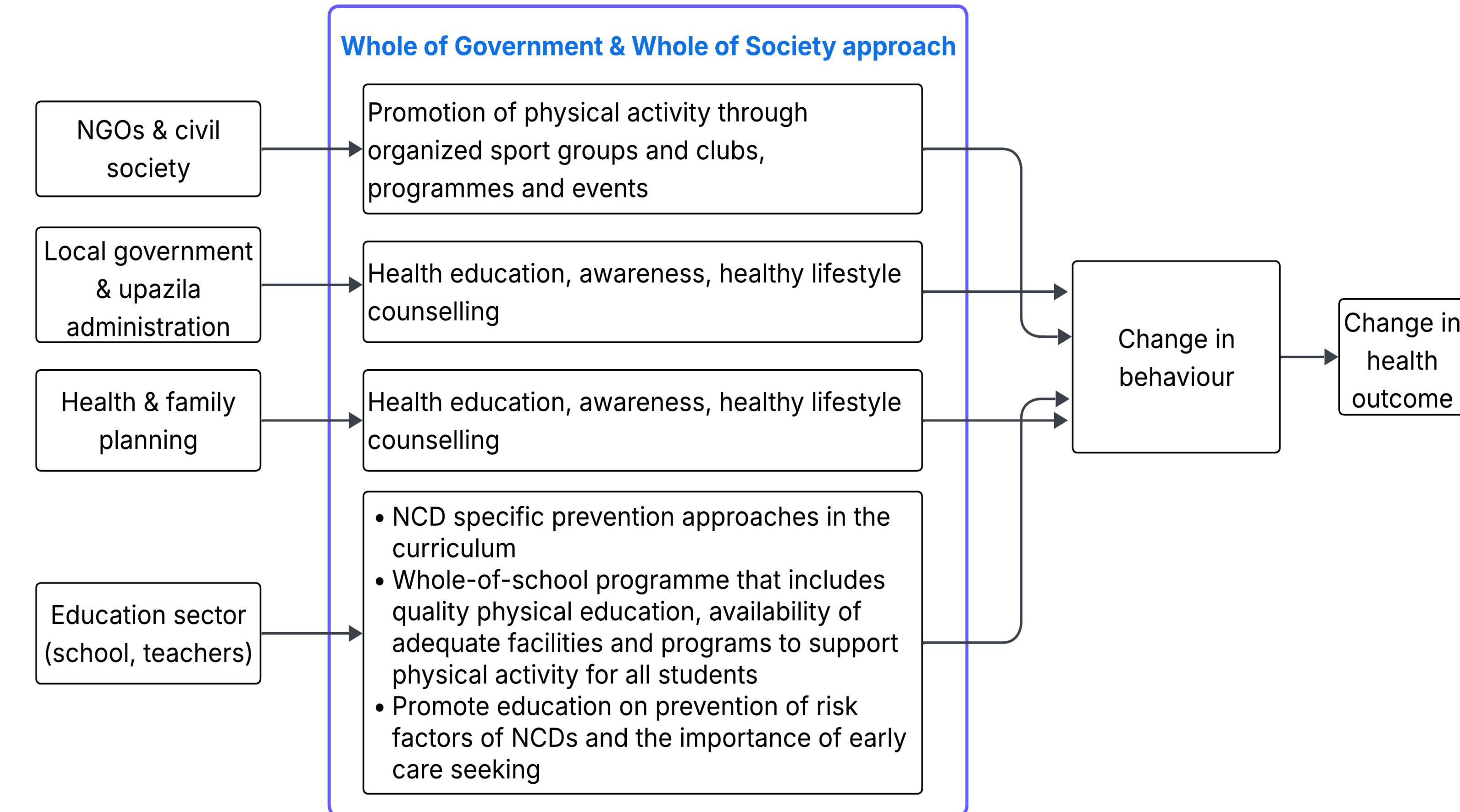


Figure 2: Performed activities by relevant stakeholders for model implementation

Acknowledgement: Representatives from the Directorate General of Health Services, local administration, various sectoral stakeholders, the BRAC JPGSPH implementation team, and the study participants.



Figure 3: Wall writing in schools on prevention and control of non-communicable diseases

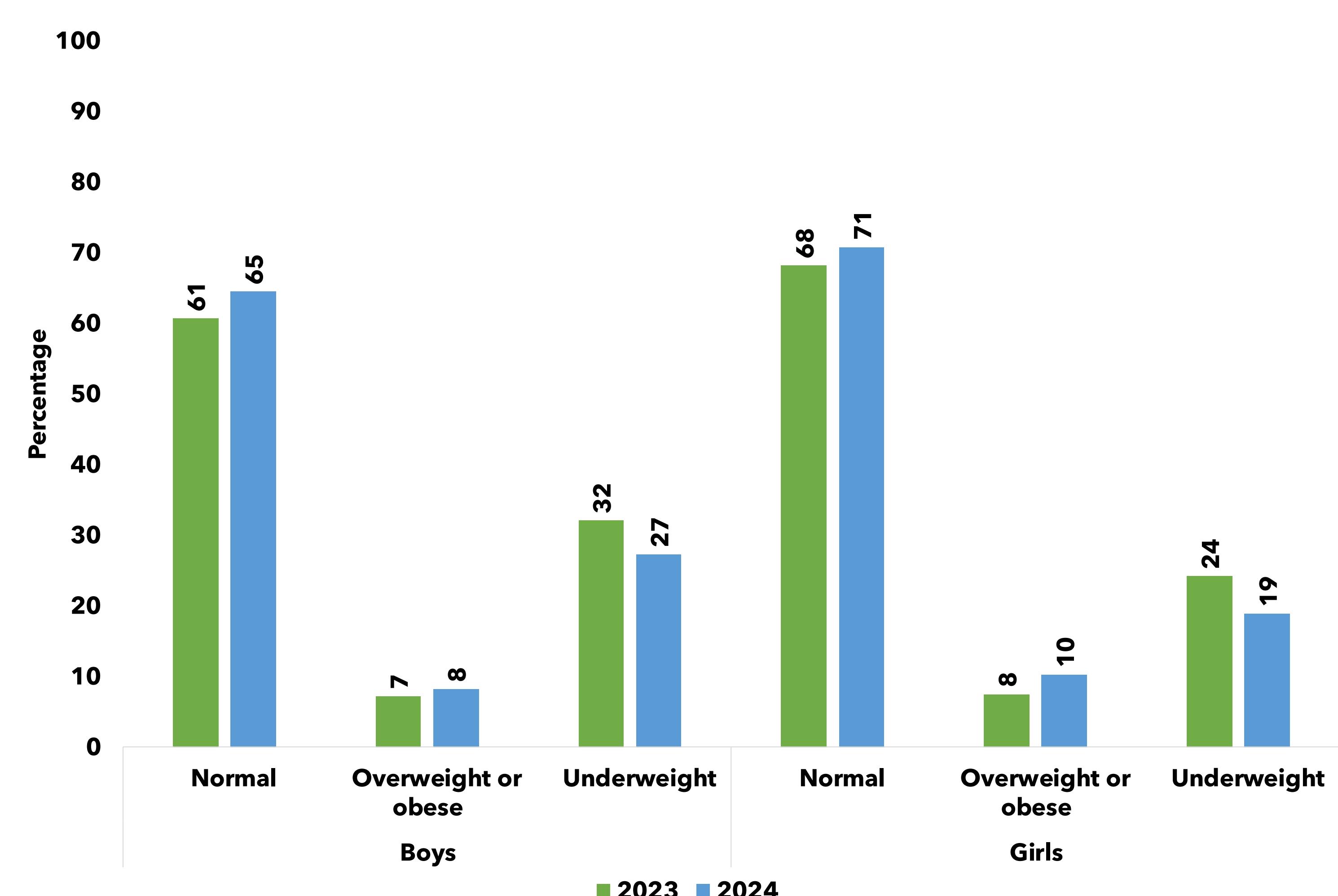


Figure 4: BMI status of adolescent boys and girls (baseline vs endline)

RESULTS

- The intervention led to a statistically significant reduction in underweight prevalence for both genders.
- The prevalence of underweight among boys decreased from 32.1% in 2023 to 27.1% in 2024, while among girls it declined from 24.2% to 18.9%.
- McNemar's test confirmed a statistically significant decrease in underweight prevalence for girls ($p < 0.001$) and boys ($p=0.001$).
- Moreover, a significant increase in overweight and obesity was observed among girls whereas the changes in overweight and obesity were non-significant for boys.

CONCLUSION

- Adopting "whole-of-government" and "whole-of-society" approach can be effective in reducing adolescent undernutrition, but the concurrent rise in overweight/obesity signals dual burden of malnutrition. Interventions must balance efforts to sustain undernutrition reduction while preventing unhealthy weight gain.



BRAC SCHOOL OF
PUBLIC HEALTH
JAMES P GRANT

Inspiring Excellence