BMI and Beyond: Context in Measuring Obesity and its Applications
Key Takeaways and Next Steps

Ihuoma Eneli MD, MS, FAAP

Professor of Pediatrics, The Ohio State University

Director, Center for Healthy Weight and Nutrition,

Nationwide Children's Hospital, Columbus, Ohio

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Lancet Diabetes & Endocrinology Commission on the Definition and Diagnosis of Clinical Obesity

Francesco Rubino [1], Rachel L Batterham [2], Marta Koch [3], Geltrude Mingrone [4], Carel W le Roux [5], I Sadaf Farooqi [6], Nathalie Farpour-Lambert [7], Edward W Gregg [8], David E Cummings [9]

Affiliations + expand

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This workshop has explored

- Science on measures of body composition and body fat distribution with a focus on the strengths and limitations of body mass index (BMI) as a measure of adiposity and health.
- The utility of BMI and alternate measures to assess obesity morbidity and mortality, and their effects on obesity prevention, treatment, and policy.

What is agreed upon?

BMI is a ***surrogate*** measure of body fat.

What are some strengths of BMI?

- Simple
- Inexpensive
- Noninvasive
- Studied extensively
- Can be helpful as a screening measure
- High levels of BMI has a stronger correlation with body fat
- Serves as a standardized and objective measure to guide treatment recommendations, insurers e.g., bariatric surgery
- Used to track growth on track growth- both extremes are important

What are limitations of BMI?

- Not a direct measure of body fat
- Does not capture fat distribution
- Does not distinguish between fat and lean mass
- Associations vary by race/ethnicity
- Not ideal metric for cut points to define obesity as a disease
- Changes in BMI is not always consistent with changes in body fat
- Flawed interpretation of measure in multiple sectors- healthcare, employers, public health
- Drives bias, stigma and discrimination and = health inequities

Body Mass Index measures BODY SIZE
…..not BODY Health
……not BODY Fat

Adipose Tissue (FAT) is the key

- Fat distribution- Visceral (Ectopic) vs. Subcutaneous
- Fat distribution varies by ethnic group and age
- Visceral fat is the major culprit for metabolic disease (unhealthy obesity)
  - Correlation with BMI- moderate, not impressive
- Adipocyte size vs. Adipocyte dysfunction
- Adipocyte size
  - Correlation with BMI- moderate
  - Larger adipocytes are most likely to be dysfunctional
- The ability to store fat in healthy depots is determined by genetics, hormones, and other factors

Alternate Measures

DXA: Dual x-ray absorptiometry
MF-BIA: Multiple frequency Bioimpedance analysis
ADP: Air displacement plethysmography
DA: Digital anthropometry

Waist circumference- Not popular

Cost

Considerations

Definition of Obesity- Cut-off points

Interpretation of BMI and alternate measures

Adipose tissue physiology and pathophysiology

Potential Opportunities

- Bias and Stigma/Lived experience
- Cultural implication
- Cost
- Communication
- Policy, public health, health care
- Outcomes- physical and psychosocial health
- Areas of tension
- Inequity in workforce- work as a social and economic determinant of health

Definition of Obesity

- *World Health Obesity (WHO):* "Condition where excess of abnormal body fat impairs health"

Key Action Statements: Evidence Quality

BMI has clinical utility and is still recommended **BUT** not the whole picture

KAS	Evidence Quality/Strength	CPG Section
KAS 1. Pediatricians and other PHCPs should measure height and weight, calculate BMI, and assess BMI percentile using age- and sex-specific CDC growth charts or growth charts for children with severe obesity at least annually for all children 2 to 18 years of age to screen for overweight (BMI ≥85th percentile to <95th percentile), obesity (BMI ≥95th percentile), and severe obesity (BMI ≥120% of the 95th percentile for age and sex).	Grade B, Moderate	Diagnosis & Measurement

Sarah E. Hampl, Sandra G. Hassink Pediatrics 2023; e2022060640. 10.1542/peds.2022-060640

Key Action Statements: Evidence Quality

KAS 2. Pediatricians and other PHCPs should evaluate children 2 to 18 years of age with overweight (BMI ≥85th percentile to <94th percentile) and obesity (BMI ≥95th percentile) for obesity-related comorbidities by using a comprehensive patient history, mental and behavioral health screening, SDoH evaluation, physical examination, and diagnostic studies.	Grade B, Strong	Evaluation

Sarah E. Hampl, Sandra G. Hassink Pediatrics 2023; e2022060640. 10.1542/peds.2022-060640

Do we throw the baby (BMI) away with the bath water?

Courtesy: Ms Alexis Tindall

What upsides or downsides exist?

Courtesy: Ms Alexis Tindall

THANK YOU!

Invite you to next workshop – PART 2 June 2023- Potential Strategies and Future Solutions

The next workshop will explore

- Strategies for improving communication about body composition, BMI, adiposity, and health across diverse groups and sectors, including strategies for mitigating misinformation or disinformation practices that lead to weight-related bias and stigma.

- Identify current evidence gaps and potential next steps that advance the field.

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