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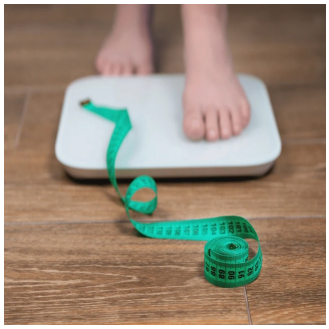
## Precision Approaches to Obesity: Promise or Illusion?



A new report from researchers at the Pennington Biomedical Research Center highlights the growing promise of precision medicine to reshape how obesity is prevented, diagnosed, and treated, while underscoring critical evidence gaps that must still be addressed.

Published in *Obesity*, the paper, *"Precision Prevention, Diagnostics and Treatment of Obesity,"* summarises the outcomes of a recent Pennington–Louisiana Nutrition Obesity Research Center (NORC) scientific workshop. The event brought together experts to examine how obesity interventions can be tailored to an individual's biology, environment, behaviour, and social context.

### Key Findings

**1. Multifactorial Precision:**

Obesity is not a one-size-fits-all condition. The authors emphasise that multiple factors, including genetics, epigenetics, metabolic phenotypes, microbiome composition, and environmental exposures, interact to shape individual differences in weight gain, weight loss, and treatment response.

**2. Diagnostic Innovation:**

Advances in diagnostic tools such as biomarkers and imaging are essential for accurately classifying obesity subtypes and assessing risk. These innovations could help guide more personalised prevention and therapy strategies.

**3. Personalised Treatment:**

Emerging data suggest that tailoring diet, exercise, pharmacotherapy, and behavioural interventions to an individual's biological and behavioural profile may lead to more effective and lasting results. However, more research is needed to establish best practices and confirm clinical benefits.

**4. Gaps and Barriers:**

Despite progress, key obstacles remain, including a shortage of large-scale clinical trials testing precision strategies, a lack of population diversity in research, limited data on cost-effectiveness, and challenges in integrating precision tools into routine clinical care.

The authors note that precision-based approaches could enhance obesity prevention by identifying at-risk individuals earlier and targeting lifestyle or environmental modifications more effectively. Similarly, personalising treatment based on biological and behavioural profiles may reduce side effects and inefficiencies by minimising trial-and-error in pharmacologic or surgical interventions.

Despite tremendous interest in precision-based treatment, the field is still relatively young. There is a need for rigorous clinical trials to empirically determine whether precision treatment is truly superior to current practices. Unfortunately, few such trials exist, and the results are mixed.

To accelerate progress, the authors call for:

- More diverse and inclusive clinical research to ensure findings apply broadly;
- Development and validation of robust biomarkers, imaging methods, and diagnostic tools;
- Comparative effectiveness trials evaluating precision-based versus standard interventions; and
- Policies and programmes that promote equitable, affordable access to precision obesity care.

Source: Pennington Biomedical Research Center

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