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Disordered Eating Behaviors and Future Cardiometabolic Risk in the National Longitudinal Study of Adolescent to Adult Health

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Adolescent Health & Emerging Adulthood Research Symposium

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Disclosures

- The authors have no commercial relationships to disclose

Background

Obesity and disordered eating behaviors

- Overweight/obesity: key public health challenge in adolescents and young adults (AYA) (SAHM Position Paper, 2016)
- Disordered eating behaviors (DEBs) arise in AYA:
 - Unhealthy weight control behaviors (Stephen 2014)
 - Vomiting, fasting/skipping meals, laxatives/diuretics
 - Binge eating (Liechty 2013)

Background

Current literature and research gaps

- Regional studies have demonstrated a high prevalence of disordered eating behaviors among adolescents considered overweight (Neumark-Stzainer, 2007)
- Research gap: no nationally representative data, young adults
- Data linking disordered eating behaviors and cardiometabolic risk limited to older adults

Objectives

1. To identify the prevalence of DEBs among young adults considered overweight or obese using nationally representative data
2. To determine the association between DEBs and cardiometabolic risk in young adults considered overweight or obese at seven-year follow-up:
 - BMI change, diabetes, hypertension, hyperlipidemia

Methods

Sample and study population

- National Longitudinal Study of Adolescent to Adult Health (Add Health)
- Nationally representative sample
- Five waves of data collection
 - Wave III: 2001-2002, 18-26 years old
 - Wave IV: 2008, 24-32 years old

Measures

Wave III: Young adult exposures (18-26 years)

- **Unhealthy weight control behaviors (UWCB)**
 - vomiting, fasting/skipping meals, or laxative/diuretic use to lose weight (Stephen 2014)
- **Binge eating behaviors**
 - “eaten so much in a short period that would have been embarrassed if others had seen it”
- **Disordered eating behaviors (DEB)**
 - Combined UWCB or binge eating behaviors

Measures

Wave IV: Seven-year follow up outcomes (24-32 years)

- **Body mass index:** height and weight (baseline and follow-up to calculate change)
- **Hyperlipidemia:** Cholesterol (HDL, LDL, triglycerides)
- **Diabetes:** hemoglobin A1c, glucose
- **Hypertension:** systolic and diastolic blood pressure measured 3x

Results

Demographics in young adulthood (Wave III, 18-26 years)

| Characteristics (N=14,322) | Mean \pm SE / % |
|--|-------------------------------------|
| Age, years | 21.82 \pm 0.12 |
| Race/ethnicity | |
| White (non-Hispanic) | 67.9% |
| Black/African American (non- Hispanic) | 15.5% |
| Hispanic/Latino | 11.8% |
| Asian/Pacific Islander (non-Hispanic) | 3.4% |
| American Indian/Native American | 0.5% |
| Other | 0.7% |

Results

Weight status in young adulthood (Wave III, 18-26 years)

| BMI category (N=14,322) | % |
|---------------------------------|----------|
| Underweight (BMI <18.5) | 3.4% |
| Normal weight (18.5 ≤ BMI < 25) | 48.0% |
| Overweight (25 ≤ BMI < 30) | 25.7% |
| Obese (BMI ≥ 30) | 22.9% |

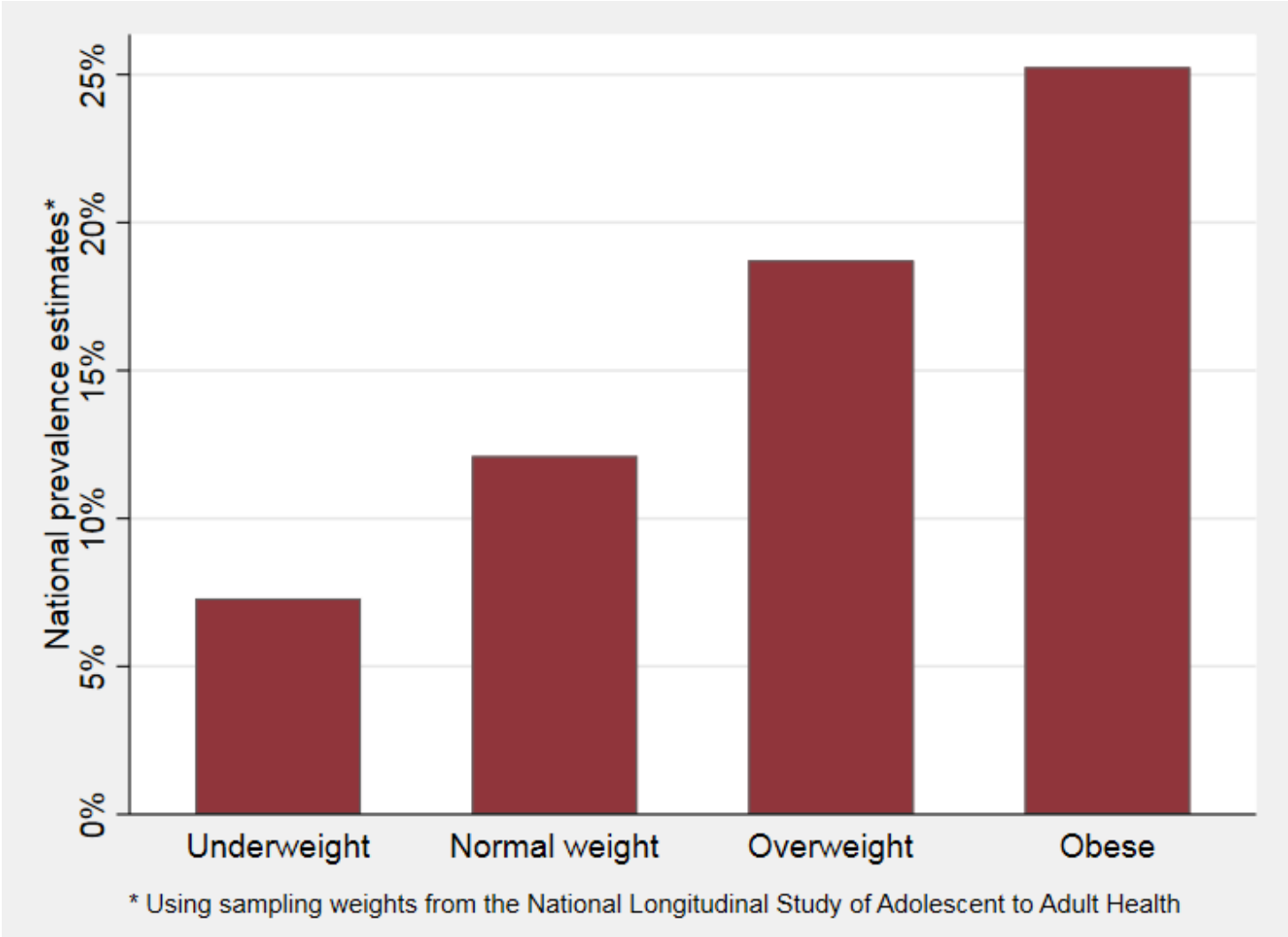
Results

Eating characteristics

| | Total | Underweight or normal weight | | Overweight or obese* | |
|-----------------------------|--------|------------------------------|-------|----------------------|-------|
| | | Female | Male | Female | Male |
| N | 14,322 | 3,176 | 4,007 | 3,457 | 3,558 |
| Disordered eating behaviors | 16.7% | 15.8% | 7.5% | 29.3% | 15.4% |

*DEB higher in overweight/obese compared to underweight/normal weight (p<0.001, chi-square)

Prevalence of disordered eating behaviors among young adults in the US, by weight status

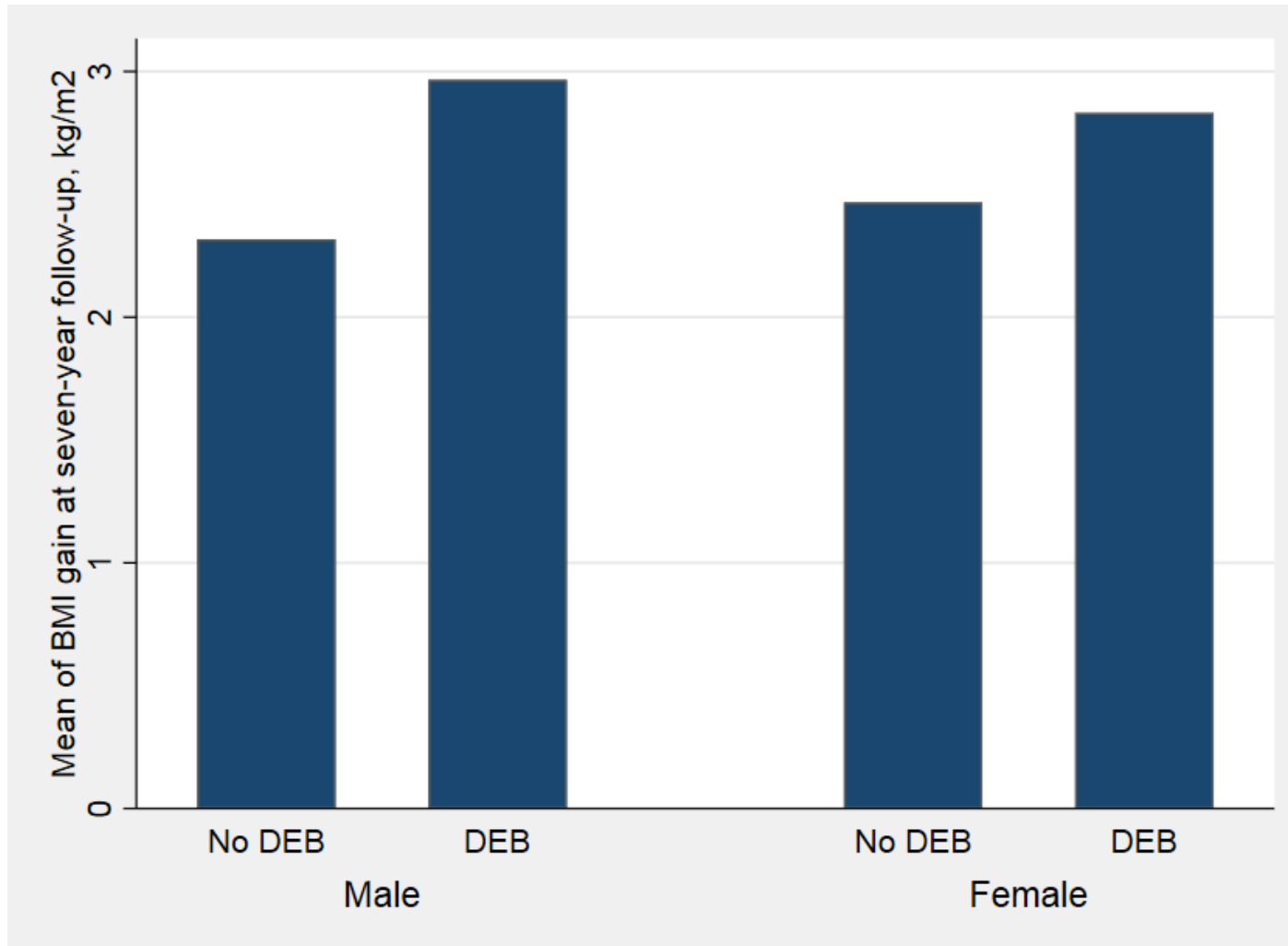


Results

Young adults with overweight or obesity

| | n | Total | Males | | Females | |
|--|-------|--------------|---------------|----------------|---------------|---------------|
| | | | No DEB | DEB* | No DEB | DEB* |
| N | | 5,552 | 2,269 | 456 | 2,003 | 824 |
| Body mass index (BMI), kg/m ² | 5,552 | 31.29 ± 5.64 | 30.22 ± 4.91 | 31.70 ± 5.47 | 31.75 ± 5.89 | 32.89 ± 6.42 |
| Weight, kg | 5,552 | 8.7% | 96.26 ± 17.93 | 100.20 ± 19.23 | 85.16 ± 17.81 | 88.51 ± 18.99 |
| *p<0.001 | | | | | | |

Mean BMI gain at seven-year follow-up among overweight/obese young adults from Add Health, by sex and baseline disordered eating behavior (DEB)



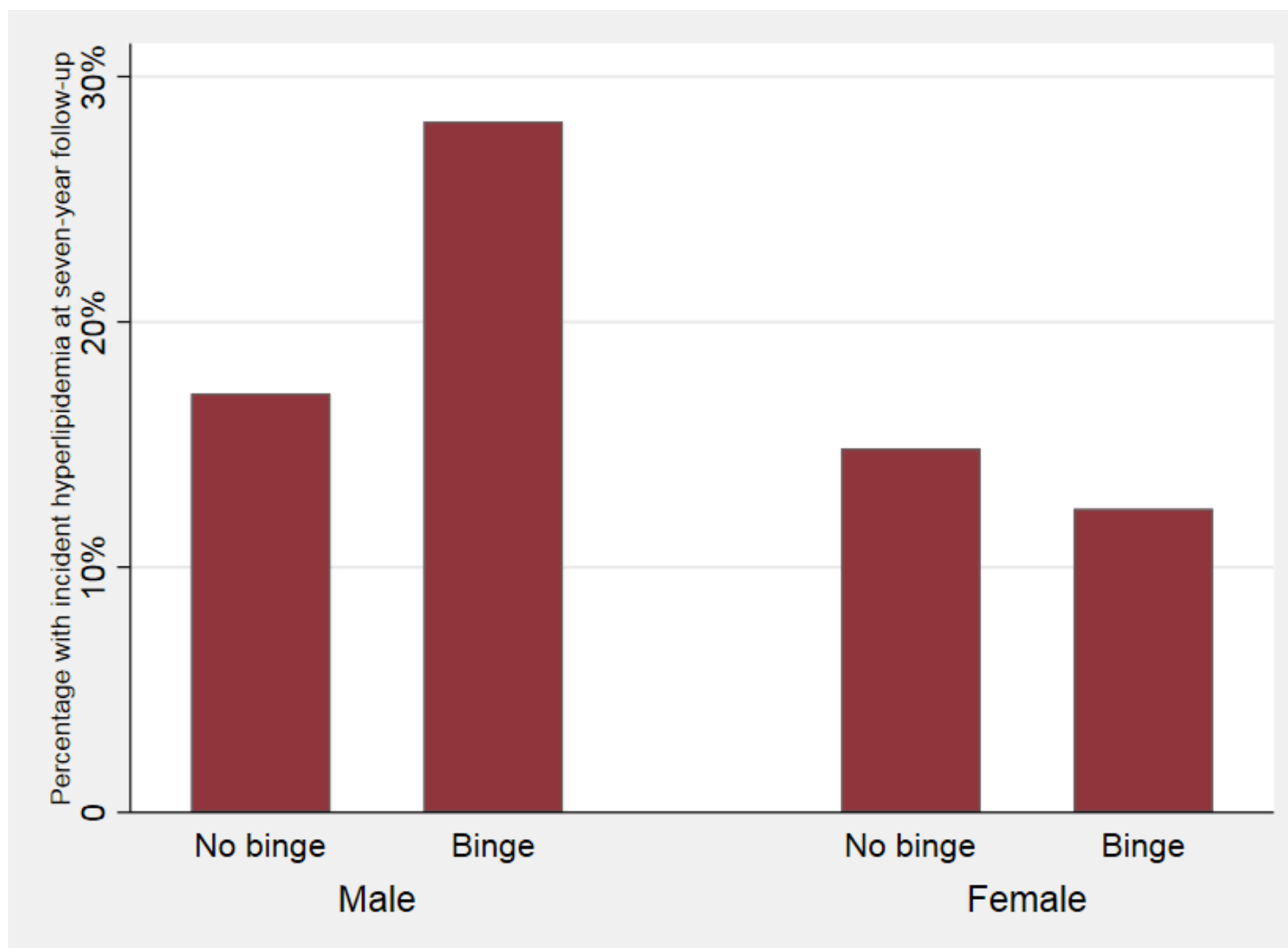
Cardiometabolic risk at seven-year follow-up for overweight/obese young adults, by sex and type of disordered eating behavior at baseline

| | Change in BMI, adjusted ^a | |
|--|--------------------------------------|------------------|
| | B (SE) ^b | p |
| Males | | |
| Unhealthy weight control behavior (UWCB) | 0.98 (0.30) | 0.001 |
| Binge eating behavior | 0.94 (0.31) | 0.032 |
| Any disordered eating behavior (UWCB or binge) | 0.99 (0.26) | <0.001 |
| Females | | |
| Unhealthy weight control behavior (UWCB) | 0.91 (0.27) | 0.001 |
| Binge eating behavior | 0.08 (0.44) | 0.851 |
| Any disordered eating behavior (UWCB or binge) | 0.57 (0.26) | 0.027 |
| Bold indicates p<0.05 | | |

^a adjusted for race/ethnicity, age, baseline BMI, and household income

^b B = Estimated coefficient from linear regression; SE = standard error

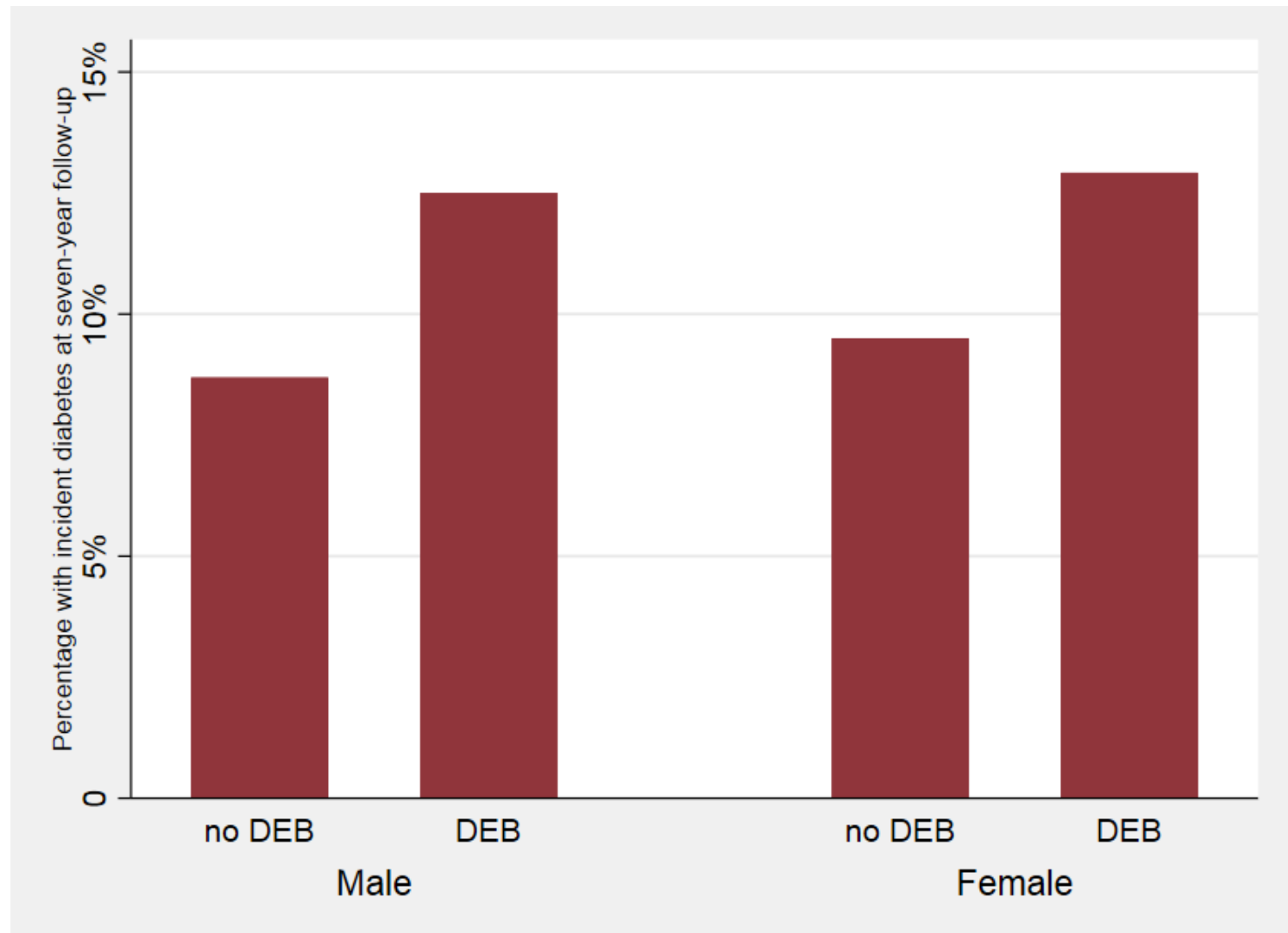
Incident hyperlipidemia at seven-year follow-up among overweight/obese young adults from Add Health, by sex and baseline binge eating behavior



Binge Eating and Hyperlipidemia

- Males: Odds ratio **1.90 (1.29 - 2.79)**, **p=0.001**
- Females: Odds ratio 0.81 (0.52 - 1.24), p=0.329
- Adjusting for race/ethnicity, age, baseline BMI, and education

Incident diabetes at seven-year follow-up among overweight/obese young adults from Add Health, by sex and baseline disordered eating behavior



Disordered Eating and Diabetes

- Males: Odds ratio 1.07 (0.76 - 1.52), 0.698
- Females: Odds ratio 1.02 (0.63 - 1.65), $p=0.934$
- Adjusting for race/ethnicity, age, baseline BMI, and education

Conclusions

Prevalence in young adulthood

- 30% of female and 15% of male young adults at a weight status overweight/obese reported DEBs
- Health care providers should screen for and address these practices in young adults

Conclusions

Seven-year outcomes

- Young adults with overweight/obesity who engage in disordered eating behaviors are likely to gain greater BMI in the long-run
- Binge eating behaviors are associated with greater odds of incident hyperlipidemia in males
 - Males may binge on proteins and fats (Murray 2016)
- Future research: sex differences in DEBs and cardiometabolic risk, longer follow-up into later adulthood

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