

Examining Sociodemographic Determinants of Adherence to the 9-5-2-1-0 Guidelines and Childhood Obesity in a Racially and Ethnically Diverse Sample of Children: Insights from an Ecological Momentary Assessment Study

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BACKGROUND

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- Pediatric guidelines in the U.S. recommend daily adherence to **9** hours of sleep, **5** portions of fruits and vegetables, **2** hours or less of screen time, **1** hour of physical activity, and **0** intake of sugar-sweetened beverages (**9-5-2-1-0 guidelines**) to aid in the prevention of obesity and promote cardiometabolic health.
- Adherence to these guidelines, related sociodemographic factors, and their association with obesity have yet to be investigated using ecological momentary assessment (EMA) in a socioeconomically, racially, and ethnically diverse sample of children.

PURPOSE:

- Aim 1:** Examine the association between sociodemographic factors and adherence to the 9-5-2-1-0 guidelines.
- Aim 2:** Examine the association between adherence to these guidelines and overweight/obesity.

METHODS

DATA SOURCE/ SETTING: Family Matters cohort study/ Minneapolis-St Paul, MN

PARTICIPANTS:

- 562 children (mean age 6.8±1.4 yrs)
- 60% income <\$50,000
- 19% African American, 17% Hispanic, 11.0% Hmong, 15% Native American, 1% Somali/ Ethiopian, 37% White.

EXPOSURES:

- Aim 1:** Self-reported sociodemographic factors: parent and child age, sex, race and ethnicity, household income, educational attainment, employment status, born in the US, food assistance, and food security.
- Aim 2:** 9-5-2-1-0 guidelines data were collected via a 7-day EMA (3596 observation days). Scored and dichotomized as high adherence (4-5) versus lower adherence (0-3) to these guidelines.

OUTCOMES:

- Aim 1:** 9-5-2-1-0 guidelines collected via a 7-day EMA (3596 observation days). Scored and dichotomized as high adherence (4-5) versus lower adherence (0-3).
- Aim 2:** Height and weight retrieved from electronic medical records; these were used to calculate child BMI percentile.

ANALYSIS:

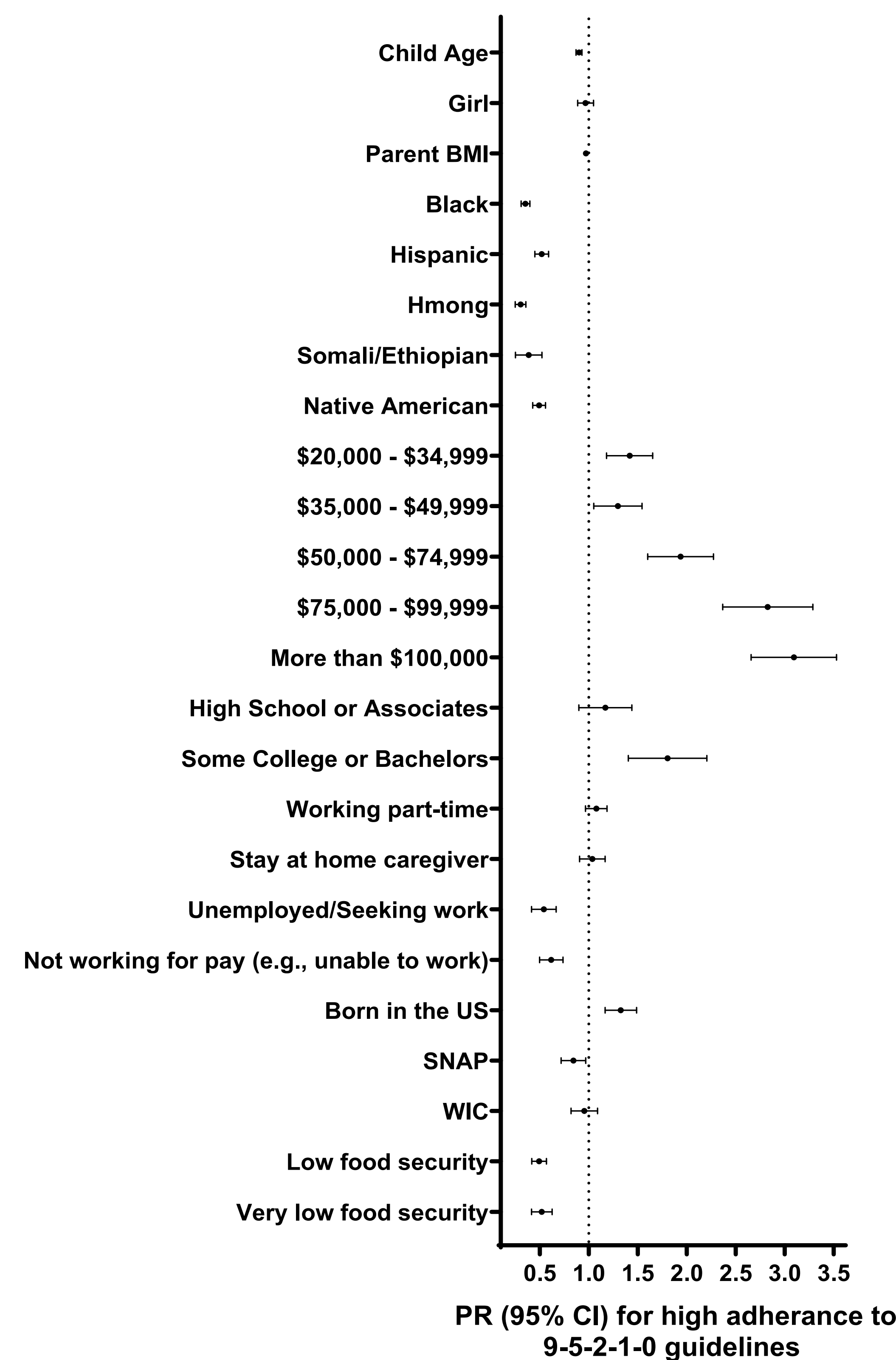
- Descriptive statistics were used to describe adherence patterns to the 9-5-2-1-0 guidelines.
- Prevalence ratios (PR) and their corresponding 95% CI were calculated using modified Poisson regression models to examine both Aim 1 (unadjusted) and Aim 2 (adjusted for child age, parent BMI, race and ethnicity, household income, and educational attainment).

RESULTS

Descriptive statistics: Daily adherence patterns to the 9-5-2-1-0 guidelines using EMA [n (%)].

Score	Observation days	Between %	Within %	Sleep	Screen Time	Physical Activity	Fruits & Vegetables	Sugar-Sweetened Beverages
0	42 (1)	26 (5)	24.1%	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
1	564 (16)	223 (40)	38.6%	71 (13)	414 (73)	30 (5)	26 (5)	23 (4)
2	837 (23)	358 (64)	36.2%	546 (65)	555 (66)	225 (27)	169 (20)	179 (21)
3	806 (22)	372 (66)	33.6%	600 (74)	508 (68)	505 (63)	391 (49)	414 (51)
4	782 (22)	361 (64)	34.1%	668 (85)	607 (77)	692 (89)	613 (78)	548 (70)
5	565 (16)	227 (40)	40.4%	565 (100)	565 (100)	565 (100)	565 (100)	565 (100)

Aim 1: Unadjusted associations between sociodemographic factors and adherence to the 9-5-2-1-0 guidelines (4-5 vs 0-3).



Aim 2: Adjusted associations between adherence to the 9-5-2-1-0 guidelines (4-5 vs 0-3) and overweight/obesity in children.

We did not find evidence that high adherence to the guidelines was associated with lower weight status in children (PR 0.95; 95% CI 0.85, 1.06).

CONCLUSIONS

- Children with lower daily adherence to the guidelines (scored 0-3) were more likely to belong to a racially and ethnically minoritized group, reside in households with lower incomes and parental educational attainment, have caregivers who were unemployed or not currently working, receive food assistance benefits, and experience low or very low food security.
- There was no evidence indicating that meeting all guidelines was associated with lower weight status.
- These findings highlight complex relationships between adherence to recommended health behaviors, sociodemographic factors, and weight outcomes for children living in socioeconomically and racially and ethnically diverse households.
- Families often face a myriad of intersecting challenges that impact their ability to maintain lifestyles recommended by public health organizations.
- Addressing these disparities requires a multifaceted approach that goes beyond promoting individual behavior change.
- Interventions and policies should emphasize solutions targeted at the broader social determinants of health.
- Such a comprehensive strategy is crucial for preventing accelerated weight gain and promoting cardiometabolic health equity for all children.

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