

**2020 Student Creative Arts & Research Symposium  
Session II  
April 14, 2020**

**Exploring Family Meals, Sleep and Media Use as  
Predictors of Childhood Overweight and Obese Status  
in Oklahoma:  
A Study from the 2016 National Survey of Children's Health**

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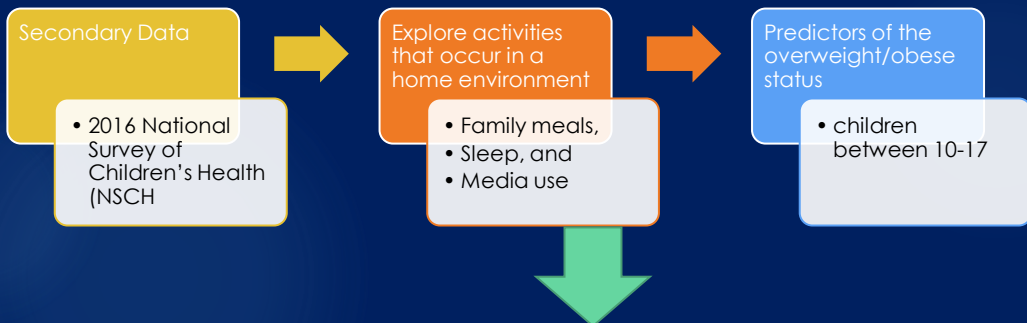
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## Study Purpose



**Determine the most significant risk factors in predicting overweight/obese status in children who live in Oklahoma**

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# Research Questions

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If childhood overweight/obese status can be predicted from the 2016 NSCH, which risk factors (family meals, sleep, and media use) are the most significant at predicting childhood overweight/obese status in Oklahoma?

Does the inclusion of a particular risk factor increase or decrease the probability of childhood overweight/obese status in Oklahoma?

Does the exclusion of a particular risk factor increase or decrease the probability of childhood overweight/obese status in Oklahoma?

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# Childhood Obesity: National Trends

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## Obesity Rate, Youth Ages 10-17, 2016-2017

Select years with the slider to see historical data. Hover over states for more information. Click a state to lock the selection. Click again to unlock.

Obesity rates, children ages 10 to 17

0 - 9.9% 10 - 14.9% 15 - 19.9% 20 - 24.9% 25 - 29.9% 30 - 34.9% 35%+

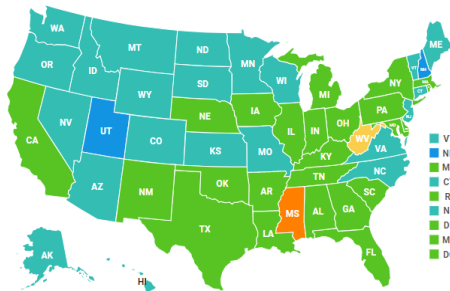
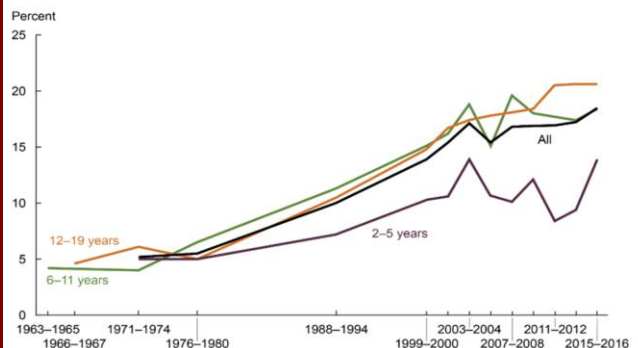


Figure. Trends in obesity among children and adolescents aged 2-19 years, by age: United States, 1963-1965 through 2015-2016



NOTE: Obesity is body mass index (BMI) at or above the 95th percentile from the sex-specific BMI-for-age 2000 CDC Growth Charts. SOURCES: NCHS, National Health Examination Surveys II (ages 6-11) and III (ages 12-17); National Health and Nutrition Examination Surveys (NHANES) I-III; and NHANES 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, 2011-2012, 2013-2014, and 2015-2016.

U.S. Department of Health and Human Services [DHHS], Centers for Disease Control and Prevention [CDC] & National Center for Health Statistics [NCHS], 2016; Ogden et al., 2016; The State of Obesity, 2018a; CDC, 2018

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## Childhood Obesity: Oklahoma – Youth Ages 10-17

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2016-2017: 18.7%

Rank	State	Obese 10-17s 2016-2017
1	Mississippi	26.1%
2	West Virginia	20.3%
3	Kentucky	19.3%
4	Louisiana	19.1%
5	Oklahoma	18.7%
6	Ohio	18.6%
7	Texas	18.5%
8	Georgia	18.4%
9	Alabama	18.2%
10	Iowa	17.7%
11	Indiana	17.5%
12	Michigan	17.2%
13	Florida	16.9%

2018: 18.0%

Rank	State	Obese 10-17s 2018
1	Mississippi	25.4%
2	West Virginia	20.9%
3	Kentucky	20.8%
3	Louisiana	20.8%
5	Michigan	18.9%
6	Oklahoma	18.0%
7	South Carolina	17.9%
8	Florida	17.8%
9	Pennsylvania	17.4%
10	Ohio	17.1%
11	New Mexico	16.9%
12	Tennessee	16.7%
13	Indiana	16.6%

The State of Obesity, 2018a, 2019

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## Current Prevention Effort

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- ▶ National Level
  - ▶ Centers for Disease Control and Prevention (CDC)
    - ▶ better health education
    - ▶ more physical education and physical education programs
    - ▶ healthier school environments
    - ▶ better nutrition services
- ▶ Oklahoma Ste Department of Health (OSDH)
  - ▶ Consumption of nutritious foods and beverages
  - ▶ At least 60 minutes of physical activities
  - ▶ Less television
  - ▶ 8 to 10 hours of sleep
  - ▶ Implementation
    - ▶ Data at the school level
    - ▶ Lack of data at the home level
  - ▶ Need
    - ▶ Research on factors that significantly increase risk within home environment

CDC, 2017a; OSDH, 2019d

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# Childhood Overweight/Obese Status

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## Obese Status

- ▶ Excessive body fat
- ▶ Measurement
  - ▶ Body weight > Body Mass Index (BMI)  $\geq 29.9$  kg/m<sup>2</sup>
  - ▶ BMI-for-age  $\geq 95^{\text{th}}$  percentile



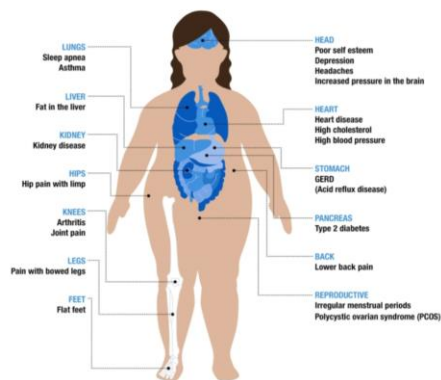
## Overweight Status

- ▶ With or without excess fat
- ▶ Measurement
  - ▶ Body weight > BMI standard, 25.0 kg/m<sup>2</sup> and < 29.9 kg/m<sup>2</sup>
  - ▶ BMI-for-age  $\geq 85^{\text{th}}$  and < 95<sup>th</sup> percentile

CDC, 2016, 2018a; National Library of Medicine [NLM], n.d.a; Obesity Action Coalition [OAC], 2018; The Triological Society, 2020

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## Complications of Childhood Obesity



Archer et al., 2018; Bassett et al., 2015; Curtis et al., 2016; Dinkel, 2017; Frederick et al., 2014; Matheson, 2016; Nationwide Children's, 2020; Zoellner et al., 2017

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# Risk Factors

Modifiable	Non-Modifiable
<ul style="list-style-type: none"> <li>• High energy foods/beverages consumption</li> <li>• Sedentary lifestyle                             <ul style="list-style-type: none"> <li>• Television</li> <li>• Video/electronic games</li> </ul> </li> <li>• Socio-economic                             <ul style="list-style-type: none"> <li>• Low Income</li> <li>• Food insecurity</li> <li>• Inadequate consumption</li> </ul> </li> <li>• Lack of sleep</li> <li>• Neighborhood disadvantages</li> <li>• Parenting style</li> </ul>	<ul style="list-style-type: none"> <li>• Genetics</li> </ul>

## Challenges

- Variation
- Multifactorial
- No single solution to prevention and management

(Archer et al., 2018; Bassett, John, Conger, Fitzhugh, & Coe, 2015; Dinkel et al., 2017)

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# Family Meals and Childhood Overweight/Obese Status

## Significant Associations

Higher frequency of healthy foods

Variety in the types of foods consumed

Emotional connection and support among family members

Increased sense of security for younger children

Opportunities for parents/caregivers to model healthy behaviors

Recognition of satiety clues during family meals

## Mixed results/ Inconsistencies

Different definitions

Reporting participant

# of people during meal

Types of meals

Sociodemographic variables

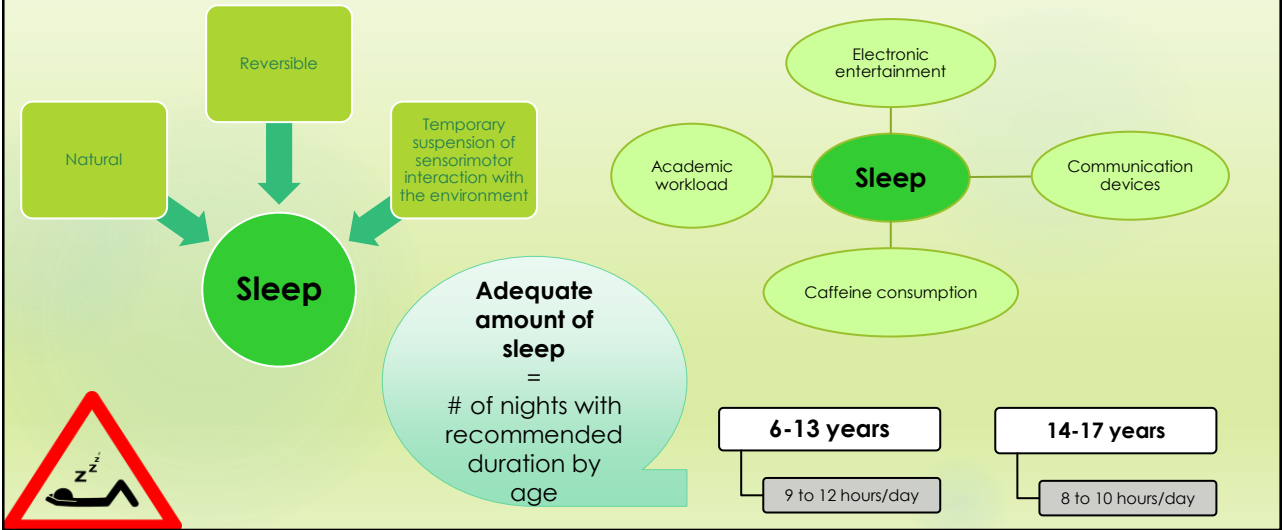
Other methodological differences

(Berge et al., 2015, 2017, 2018; Brooks, 2017; Caldwell et al., 2018; Dallacker & Hertwig, 2019; Dwyer et al., 2015; Gunther et al., 2019; Jones, 2018; Lee et al., 2016, Lee, & Park, 2016; Valdés et al., 2013)

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# Sleep

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## Current Findings & Other Research Studies

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### Sleep and Childhood Overweight/Obese Status

#### Associations

##### Sleep duration and quality

- Physiological changes
  - Appetite & Food Intake
  - Decrease in leptin
  - Increase in ghrelin
- Behavioral changes
  - Physical activities
  - Types of foods

#### Mixed results/ inconsistencies

Different demographics

Variations in sleep measure

Methodological/statistical issues

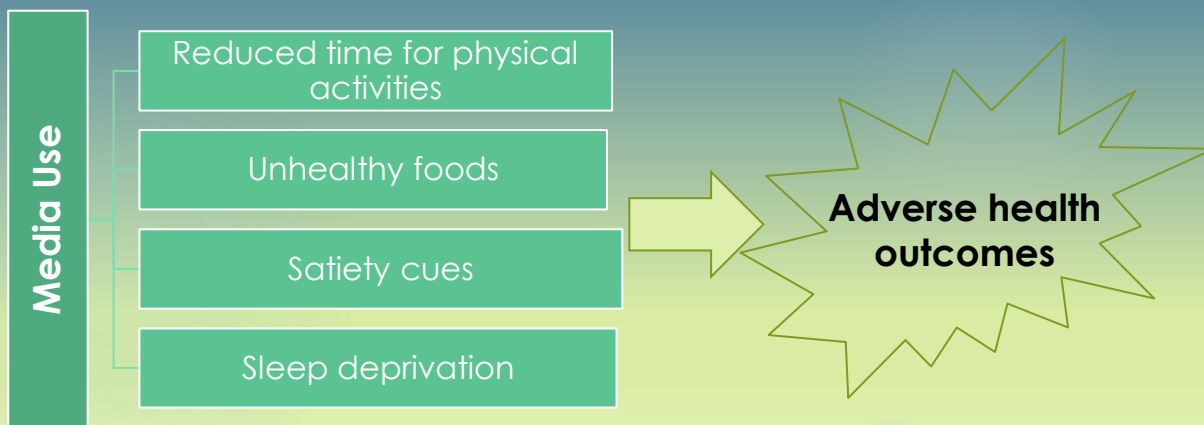
(Baiden, Tadeo, & Peters, 2019; Chaput & Dutil, 2016; Gohil, 2018; Hart et al., 2017; Narcisse et al., 2019; Robinson et al., 2017)



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## Media Use

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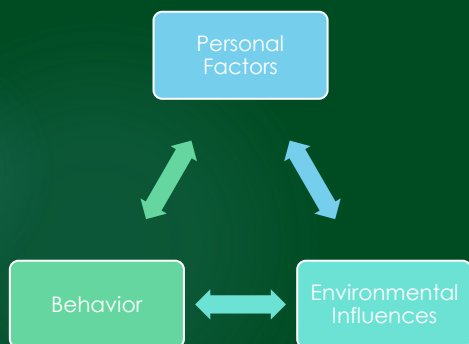


(Baiden, Tadeo, & Peters, 2019; Chaput & Dutil, 2016; Gohil, 2018; Hart et al., 2017; Lee, Kubik, & Fulkerson, 2018 ; Narcisse et al., 2019; Robinson et al., 2017; Tanskey et al., 2018 )

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## Social Cognitive Theory

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- ▶ Applications
  - ▶ Health-related programs
    - ▶ Increase confidence in performing a behavior
    - ▶ Predict behavior
    - ▶ Model healthy behavior
  - ▶ Childhood obesity prevention
    - ▶ individual/internal characteristics
    - ▶ environmental/external factors

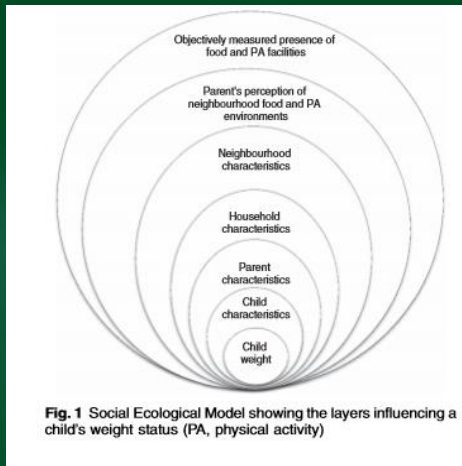
Office of Behavioral and Social Sciences Research, n.d.

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## Socioecological Model/Ecological Model (SEM)

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### ► Applications

- Childhood obesity-related studies or interventions
- Family-based behavioral change program
- More complex

Ohri-Vachaspati et al., 2015

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## Research Hypotheses

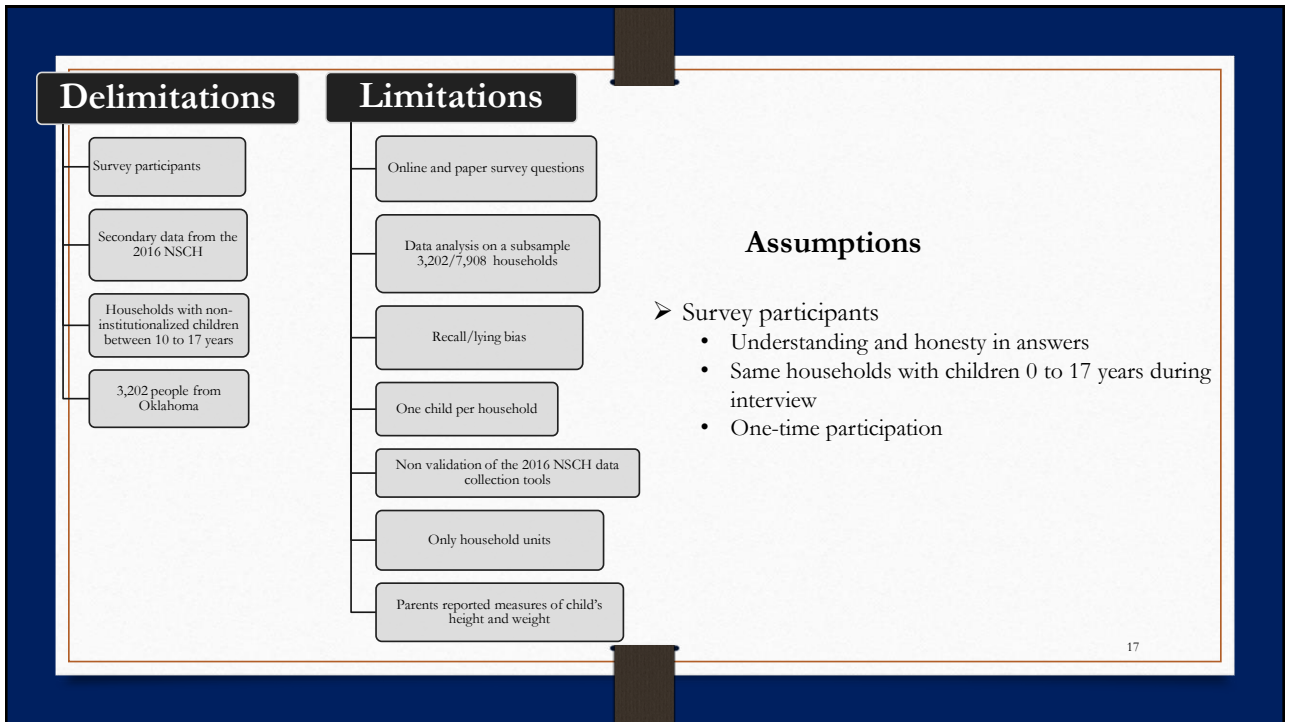
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- $H_{01}$ : Family meals, sleep, and media use will be neither predictive nor protective of childhood overweight/obese status in Oklahoma.
- $H_{02}$ : Family meals, sleep, and media use will not significantly differ between children of normal weight and children who are overweight/obese in predicting childhood overweight/obese status in Oklahoma.
- $H_{03}$ : Family meals, sleep, and media use will not significantly differ by age groups (10-12 years and 13-17 years) in predicting childhood overweight/obese status in Oklahoma.
- $H_{04}$ : Family meals, sleep, and media use will not significantly differ between children who are male and children who are female in predicting childhood overweight/obese status in Oklahoma.

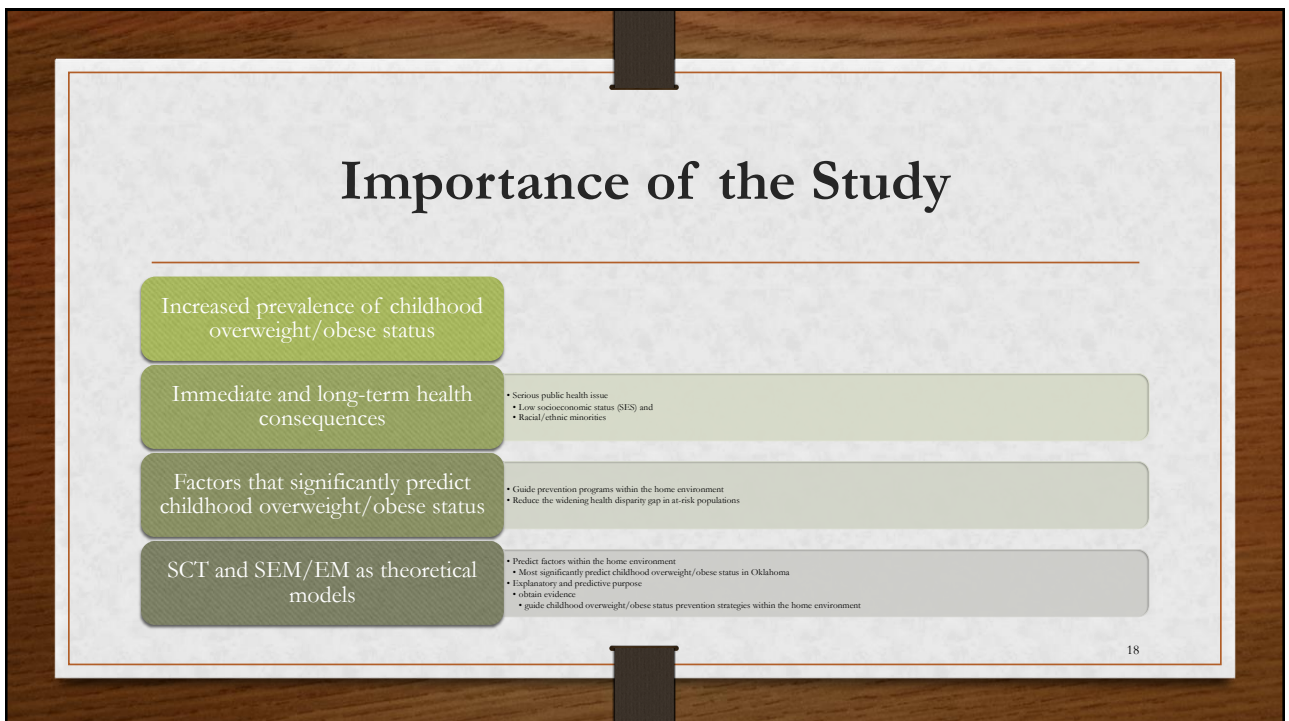


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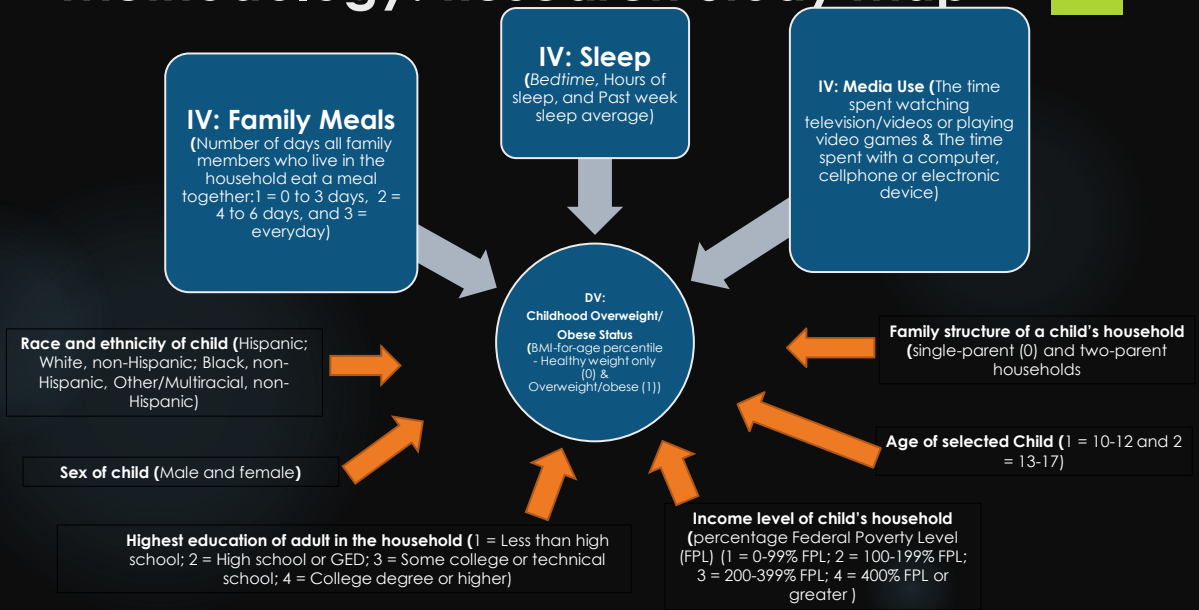
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# Methodology: Research Study Map

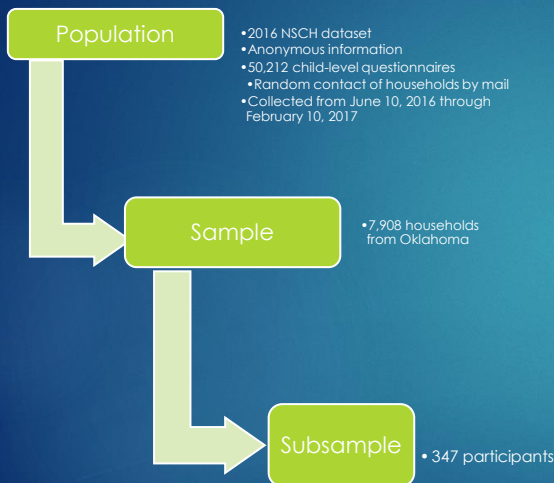
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# Methodology

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- **Data Analysis Plan**
  - **Data Preparation and Missing Data**
    - 764 recorded cases
      - 464 (60.7%) cases with missing data
    - DV overweight/obese status
      - 417 (54.7%) missing data
      - 347 (46.5%) less than half responses
    - Final subsample
      - 347 data for analysis

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# Methodology

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## Descriptive Analysis

Summary of each variable

## Bivariate Analysis

Demographic variables &  
Dependent Variable

Independent Variables and  
Dependent Variable  
 $p < .05$

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# Results: Descriptive Analysis

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## Demographic Variables

51.9% male

57.3% White, Non-Hispanic

52.4% adults, college or a higher education level

37.2% Federal Poverty Level (FPL)  $\geq$  400%

68.9% two-parent household

69.7% children 13 and 17 years old

## Independent Variables

### Family meals

• 37.2% ate meals 4 to 6 days previous week

### Sleep

• 84.7% usually/always went to bed at the same time on weeknights

### Media use

• 73.5% - TV, videos, video games  
• 65.4.0% - computer, cellphone or electronic device

## Dependent Variable

67.1% healthy weight status

32.9% overweight/obese

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# Bivariate Analysis

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- Crosstabulations (Pearson's chi-square and Cramer's V tests)
  - IV (family meals, sleep, and media use)  $p < .05$ 
    - Logistic regression analysis
- Pearson's chi-square

Family meals

•  $p = .477$

Sleep

• bedtime  $p = .824$ ;  
• sleep - past week sleep average  $p = .212$ ;  
• sleep - hours of sleep  $p = .281$ ;

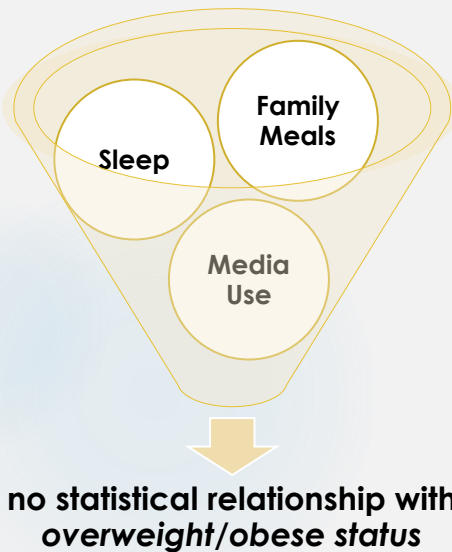
Media use

• daily average time spent watching television, videos or playing video games  $p = .513$ , and  
• media use - daily average use of computer, cellphone or electronic devices  $p = .581$

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## Discussion – Current Findings

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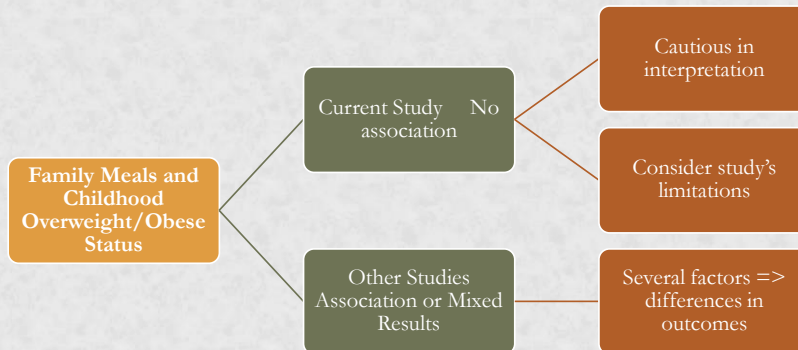


### Family Meals, Sleep and Media Use in Predicting of Childhood Overweight/Obese Status in Oklahoma

- ☒ not a protective nor a predictive factor
- ☒ no significant difference between normal weight children and children who are overweight/obese
- ☒ no significant difference by age groups (10-12 years and 13-17 years)
- ☒ no significant difference between male and female children

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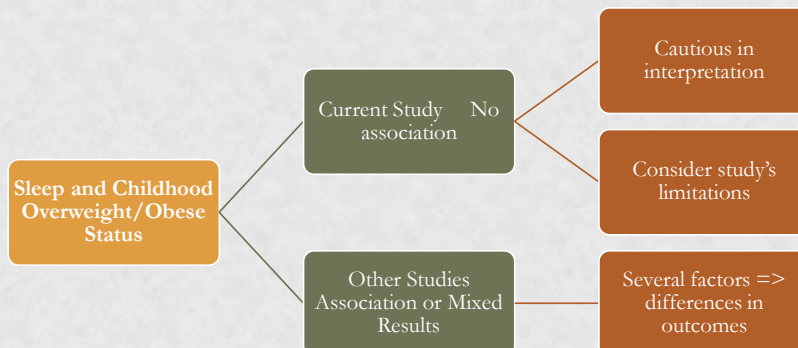
## Discussion – Current Findings



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## Discussion - Current Findings

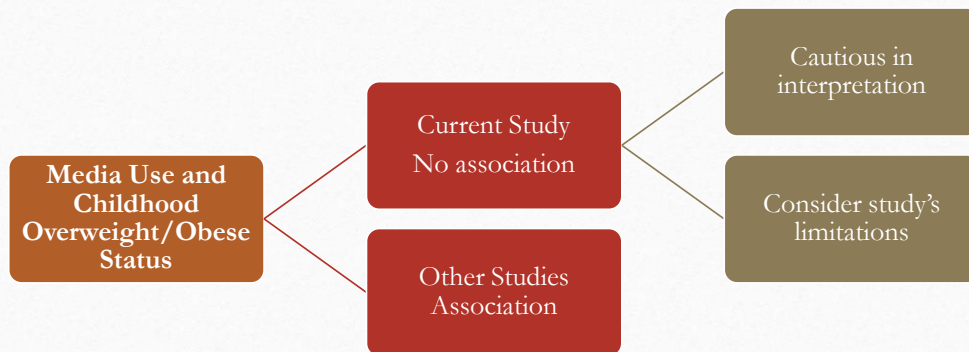


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## Discussion - Current Findings



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Nationally representative sample

### First attempt

- Risk factors, within the home environment,
- Most significant predictors of childhood overweight/obese status in Oklahoma

Relevance of data collection methods on research outcomes

Supports of family-based approaches for the prevention of childhood overweight/obese status

Strengths

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# Strengths and Limitations



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# Implications

## Methodology for national surveys



- ☐ Population-based longitudinal studies
  - Qualitative and quantitative research
  - Most significant risk factors of childhood *overweight/obese status*.

## National surveys' contribution to research



- ☐ Rigorous data collection methods
- ☐ Release of data to other researchers

## Factors outside control of researchers



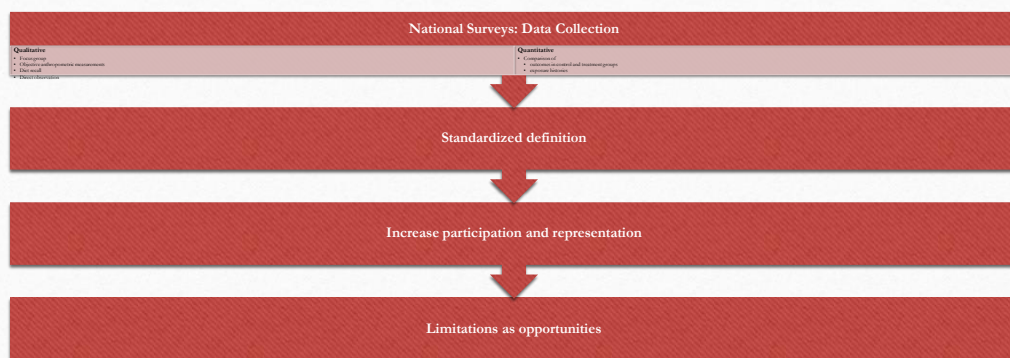
- ☐ Quality of data
- ☐ Subsequent analyses of data
  - Lack of responses
  - Respondents' relocation
  - Lack of internet or telephone access
  - Lack of time and other non-response biases
  - Other factors like respondents' relocation, lack of internet or telephone access, lack of time and other non-response biases may affect the quality of data.

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# Recommendations for Future Research



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# Recommendations for Health Education and Health Promotion Practice

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- Effect of family meals, sleep, and media use on health
- Realistic recommendations/resources to parents or caregivers
- Protective behaviors
- Seek help early
- Perseverance despite challenges
- Interdisciplinary research on modifiable factors
- Interdisciplinary research on practical interventions
- Feasibility of interventions
- Professional competencies
- Multidisciplinary skills on application and theories

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