

Science Base Chapter:

Individual Diet and Physical Activity Behavior Change

Subcommittee 3

Subcommittee 3 Membership

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Introduction

- Focus on individual behavior change (“what works”)
- Topics include behaviors and contextual factors influencing an individual’s ability to make behavior changes
- Key strategy– self-monitoring
- Emerging topics of interest – sleep patterns, mobile health

Scope

Contextual Factors

Acculturation

Household Food
Insecurity

Behaviors

Family Shared Meals

Eating Out

Food and Menu Labeling

Sedentary Behaviors

Self-monitoring

Sleep Patterns

Outcomes

Diet, Physical Activity

Weight/
anthropometry
outcomes

Chronic disease
risk/biomarkers

Methodology

- Most questions addressed using NEL Systematic Review
- Eating Out
 - *Update to 2010 DGAC's NEL Systematic Review*
- Sedentary Behavior, Including Screen Time
 - *Community Preventive Services Task Force Obesity Prevention and Control: Behavioral Interventions that Aim to Reduce Recreational Sedentary Screen Time*

Topics Addressed

Eating Out

Family Shared Meals

Sedentary Behavior, Including Screen Time

Self-Monitoring

Food and Menu Labeling

Household Food Insecurity (HFI)

Acculturation

Status Update

No substantive changes since the work was previously reported in a public meeting

Major Conclusions and Recommendations Behaviors

Eating Out

Conclusions

- Among adults, moderate evidence from prospective cohort studies in populations ages 40 years or younger at baseline indicates higher frequency of fast food consumption is associated with higher body weight, body mass index (BMI), and risk for obesity.
 - **DGAC Grade: Moderate**
- Among children, limited evidence from prospective cohort studies in populations ages 8 to 16 years at baseline suggests that higher frequency of fast food consumption is associated with increased adiposity, BMI z-score, or risk of obesity during childhood, adolescence, and during the transition from adolescence into adulthood.
 - **DGAC Grade: Limited**

Eating Out

Research Recommendations

1. Develop a standard methodology to collect and characterize various types of eating venues.
2. Conduct rigorously designed research to examine the longitudinal impact of obtaining or consuming meals away from home from various types of commonly frequented venues on changes in food and beverage intakes (frequency, quantity, and composition), body weight, adiposity, and health profiles from childhood to adulthood in diverse (racial/ethnic, socioeconomic, cultural, and geographic) groups of males and females.

Family Shared Meals

Conclusions

- Limited evidence from prospective studies shows inconsistent relationships between the number of family shared meals and body weight of children and adolescents.
 - **DGAC Grade: Limited**

Family Shared Meals

Research Recommendations

1. Conduct studies in diverse populations that assess not only frequency of family shared meals, but also quality of family shared meals.
2. Conduct RCTs to isolate the effect of interventions that increase the frequency of family meals from other health and parenting behaviors that may be associated with dietary intake and weight status.

Sedentary Behavior

Conclusions

- Moderate and consistent evidence from prospective studies that followed cohorts of youth into adulthood supports that adults have a higher body weight and incidence of overweight and obesity when the amount of TV viewing is higher in childhood and adolescence.
 - **DGAC Grade: Moderate**
- Moderate evidence from prospective studies suggests no association between sedentary behavior in adulthood and change in body weight, body composition, or incidence of overweight or obesity in adulthood.
 - **DGAC Grade: Moderate**
- The DGAC concurs with the Community Guide, which found strong evidence that behavioral interventions are effective in reducing recreational sedentary screen time among children ages 13 years and younger. Limited evidence was available to assess the effectiveness of these interventions among adults and no evidence was available for adolescents ages 14 years and older.
 - **DGAC Grade: Strong**

Sedentary Behavior

Research Recommendations

1. Develop improved and better standardized and validated tools to assess sedentary behaviors and activities that children, adolescents, and adults regularly engage in.
2. Conduct prospective research to examine the effects and mechanisms of the quantity, patterns, and changes of sedentary behaviors on diet quality, energy balance, body weight, adiposity, and health across the life span in groups within the U.S. population with diverse personal, cultural, economic, and geographic characteristics.

Self-Monitoring

Conclusions

- Moderate evidence, primarily in overweight adult women living in the United States, indicates that self-monitoring of diet, weight, or both, in the context of a behavioral weight management intervention, incorporating goal setting and performance feedback improves weight-loss outcomes.
 - **DGAC Grade: Moderate**
- Limited but consistent evidence suggests that higher frequency or greater adherence to self-monitoring of diet, weight, or both, in the context of a behavioral weight management program, is associated with better weight-loss outcomes.
 - **DGAC Grade: Limited**

Self-Monitoring

Research Recommendations

1. Evaluate the impact of different types, modalities, and frequencies of self-monitoring on body weight outcomes during both the weight loss intervention and maintenance periods.
2. Evaluate the comparative effectiveness of performance feedback from self-monitoring delivered through automated systems versus personal interactions with a counselor.
3. Test the effectiveness of self-monitoring on weight outcomes in understudied groups, including ethnic/racial minorities, low education, low literacy, and low numeracy populations, males, and subjects younger than age 30 years and older than age 60 years.
4. Conduct RCTs based on sound behavioral change theories that incorporate self-monitoring, employ heterogeneous populations, and are powered for small effect sizes and high attrition rates, to test the short- (e.g., 3 months) and long-term (e.g., 12 months) effects of mobile health technologies on dietary and weight outcomes.

Food and Menu Labeling

Conclusions

- Limited and inconsistent evidence exists to support an association between menu calorie labels and food selection or consumption.
 - **DGAC Grade: Limited**

Note: Conclusion based on RCT's conducted under laboratory simulation conditions of unknown external validity to “real world” conditions.

Food and Menu Labeling

Research Recommendations

1. Develop novel labeling approaches to provide informative strategies to convey caloric intake values on food items consumed at home and in restaurant settings.
2. Compare labeling strategies across various settings, such as restaurants, stores, and the home to determine their efficacy in altering food selection and health outcomes, including weight.
3. Evaluate process and impact of recent FDA food and menu labeling regulation.

Major Conclusions and Recommendations Contextual Factors

Household Food Insecurity

Conclusions

- Limited and inconsistent evidence from studies conducted in adults and children ages 3 to 6 years suggests that a positive association may exist between persistent and/or progressing household food insecurity and higher body weight in older adults, pregnant women, and young children. No studies reported a relationship with lower body weight.
 - **DGAC Grade: Limited**

Household Food Insecurity

Research Recommendations

1. Conduct prospective cohort studies that cover a wide age range during childhood and adolescence and include children, families, and ethnically/racially diverse populations and describe potential effect modifiers such as gender, ethnic and cultural factors, family structure, area of residence (i.e., urban vs. rural), employment, and use of social support systems while examining the relationship between household food insecurity, dietary intake, and body weight.
2. Standardize research methodology, including developing a consistent approach to measuring food insecurity and use of measured height and weight to reduce the likelihood of responder bias.

Acculturation

Conclusions

- Limited evidence from cross-sectional studies suggests that in adults of Latino/Hispanic national origin, particularly among women and persons of Mexican origin, higher acculturation to the United States is associated with lower fruit and vegetable intake, as well as higher intake of fast food. Insufficient evidence is available for children, Asians and African Americans in general, and among populations of diverse Latino/Hispanic national origin to draw a conclusion regarding the association between measures of acculturation and dietary intake.
 - **DGAC Grade: Limited**
- Limited evidence suggests a relationship between higher acculturation to the United States and increased body weight. This relationship varies by national origin and gender. Specifically, findings were mixed in both Asian and Latino/Hispanic populations. In Asians, the association was stronger in women than men and in Latino/Hispanic populations; associations were stronger in Mexican-born women.
 - **DGAC Grade: Limited**

Acculturation

Research Recommendations

1. Conduct prospective longitudinal studies that start in early childhood to track dietary intake, sedentary behaviors, body weight, and chronic disease outcomes across the life course. Include the diversity of ethnic/racial groups in the United States, including Asians, African Americans and Latinos/Hispanics of diverse national origins. Include comparison groups in countries of origin to rule out, among other things, the potential confounding by internal migration from rural to urban area within the country of origin.
2. Develop a standard tool to measure acculturation or validation of multidimensional acculturation scales in different immigrant groups and in different languages.

Chapter Summary

- Motivating and facilitating individual behavior change is necessary
- Promising behavioral strategies:
 - Reducing screen time
 - Reducing the frequency of eating out at fast- food restaurants
 - Increasing frequency of family shared meals
 - Self-monitoring of diet and physical activity behavior
 - Effective food labeling to target healthier food choices

Chapter Summary – Action Items

1. Continuous support of Federal programs to help alleviate the consequences of household food insecurity
2. Food and nutrition assistance programs take into account the risk that immigrants have of giving up their healthier dietary habits soon after arriving in the United States
3. Efforts to provide all individuals living in the United States with the environments, knowledge, and tools needed to implement effective individual- or family-level behavioral change strategies to improve the quality of their diets and reduce sedentary behaviors

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Discussion