

Subcommittee 3:

Diet and Physical Activity
Behavior Change

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Scope

- Dietary/physical activity (PA) behaviors
 - Motivators/facilitators/barriers
 - Recommended dietary and PA behaviors
 - Interventions to help people improve adherence to dietary and PA recommendations
 - Models of individual and small group dietary and lifestyle behavior change interventions:
 - Behavioral change strategies and intervention characteristics
 - Innovations in modes of intervention for individual dietary and lifestyle behavior change

Scope

Contextual Factors

Acculturation

Household Food
Insecurity

Behaviors

Sedentary behaviors

Eating Out

Family shared meals

Self-monitoring

Food/menu label use

Sleep

Outcomes

Diet, Physical
Activity

Weight/
anthropometry
outcomes

Chronic disease
risk/biomarkers

Key Topic Areas

- Sedentary Behavior Including Screen Time
- Acculturation
- Eating Out
- Mobile Health
- Self-monitoring
- Household Food Insecurity
- Family Shared Meals
- Sleep
- Food/Menu Use

Experts & Consultants

Invited Experts (March to July 2014)

None

Consultant SC Members

- Michael G. Perri, PhD, ABPP
 - Dean, College of Public Health and Health Professions
 - The Robert G. Frank Endowed Professor of Clinical and Health Psychology University of Florida

Questions Addressed Today

Acculturation

1. What is the relationship between acculturation and measures of **dietary intake**?
2. What is the relationship between acculturation and **body weight**?
3. What is the relationship between acculturation and risk of **cardiovascular disease**?
4. What is the relationship between acculturation and risk of **type 2 diabetes**?
5. What is the relationship between acculturation and prevalence of **breast, prostate, lung, colon cancer and total cancer mortality**?
6. What is the relationship between acculturation and risk of **adverse pregnancy outcomes** including low birth weight, very low birth weight, small for gestational age, prematurity, preeclampsia, and eclampsia?

Note: Acculturation measured by scales or simple proxies for acculturation

Questions Addressed Today

Eating Out

7. What is the relationship between eating out and/or take away meals and body weight in children and adults?

Mobile Health

8. What is the relationship between use of mHealth technology (e.g. cell texting, i-phones/tablets apps), alone or in combination with traditional group sessions or face-to-face counseling, and dietary behaviors (foods, food groups, dietary quality indices, macronutrient intakes and proportions)?
9. What is the relationship between use of mHealth technology alone or in combination with traditional group sessions or face-to-face counseling, and body weight?

Acculturation

Acculturation Background

Acculturation refers to the

- Process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of a new culture¹
- Gradual exchange between immigrants' original attitudes and behavior and those of the host culture²

¹ Abraido-Lanza AF, White K, Vasques E. Immigrant populations and health. In: Anderson N, editor. Encyclopedia of health and behavior. Newbury Park, CA: Sage; 2004. p. 533–537.

² Redfield R, Linton R, and Herskovits MJ. Memorandum for the study of acculturation. American Anthropologist. 1936. 38:149–152.

Analytical Framework: Acculturation

Target Population

Children (2 to 18 years) and adults, healthy and at risk for chronic disease

Intervention/Exposure

Acculturation measured by acculturation scales, or proxies for acculturation (time of living in the US, language preference, place of birth)

Comparator

Different levels of acculturation
Examine by age, gender, ethnic/racial group

Intermediate Outcomes

- Diet quality indices
- Foods/food groups
- Macronutrient intakes/proportions
- Patterns of physical activity
- Physical activity and sedentary behavior
- HTN, BP
- Triglycerides
- LDL-C, HDL-C (including TC:HDL & LDL:HDL)
- BMI, BMI z-score
- Weight change, % body fat mass
- Child growth indices
- Glucose Intolerance
- Insulin Resistance
- LBW, VLBW, SGA
- Anemia in pregnancy

Endpoint Health Outcomes

- Incidence of healthy weight, overweight, obesity
- Incidence of CVD, CVD-related death, stroke, myocardial infarction
- Incidence of T2D
- Cancer (total mortality; incidence of breast, prostate, colon and lung)
- Incidence of eclampsia and preeclampsia, prematurity

Key Confounders

- Age
- Gender
- Movement from urban to rural areas or vice versa
- Ethnicity/race
- SES/socioeconomic position
- Physical activity
- Nutrient/energy density of diet
- Total energy intake
- Health care access

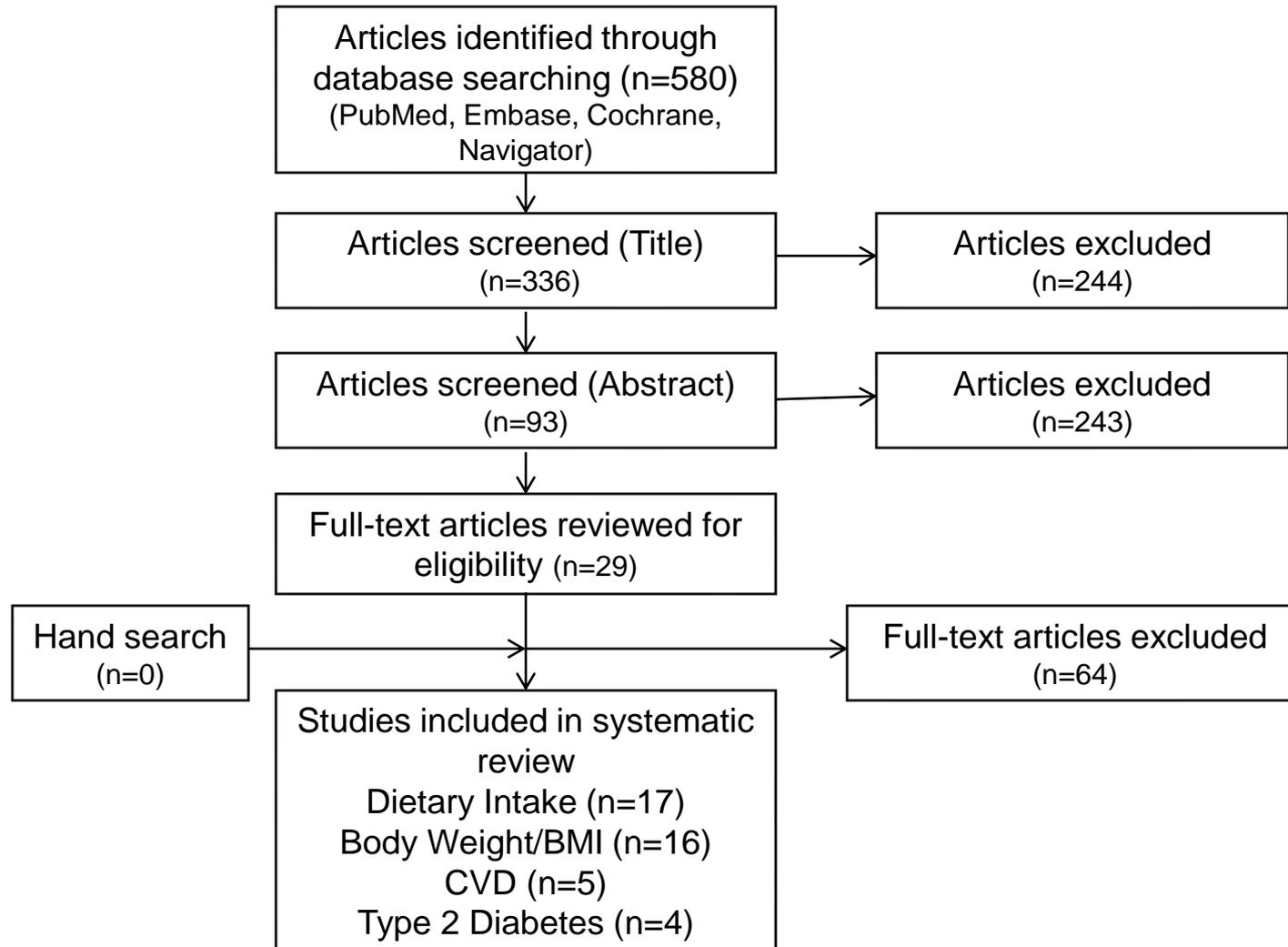
Acculturation

Literature Search: Inclusion/Exclusion Criteria

- English language peer-reviewed articles published 2004 –2014
- Human subjects > 2 y
- Healthy or with elevated chronic disease risk (excluded studies with all subjects diagnosed with disease)
- Studies conducted within the United States
- Prospective cohort, cross sectional studies, randomized or non-randomized controlled trials
 - Observational studies > 500 subjects
- Multidimensional or multiple proxies (e.g., length of residence, language preference, place of birth) for acculturation utilized
- Diet quality, body weight, CVD, T2D, cancer and pregnancy outcomes

Acculturation

Literature Search Results



Acculturation and Dietary Intake

1. What is the relationship between acculturation, as measured by acculturation scales or proxies for acculturation, and measures of dietary intake?

Acculturation and Dietary Intake

Description of the Evidence

- 17 studies were included in this review:
 - Study design: 15 cross-sectional, 2 longitudinal studies
 - Population: 10 Latino/Hispanic populations (5 in Mexican Americans); 6 Asian populations; 1 study included both Asian and Latino/Hispanic populations; 2 studies in children; 3 studies exclusively in women
 - Location: 1 national and 1 US-Mexico border state study, 10 California studies, one each from Massachusetts, Hawaii, New York, a Midwestern city
 - Risk of bias: related to exposure and outcome measures

Acculturation and Dietary Intake

Description of the Evidence

- Acculturation measures differed substantially
 - Multidimensional acculturation scales used in 7 studies with Latino/Hispanic populations and 4 studies with Asian populations
 - Acculturation proxies used in 4 studies with Latino/Hispanic populations and 2 studies with Asian populations
- Dietary intake primarily assessed using short screening tools
- Outcomes assessed
 - Fruit/vegetable intake
 - Sugar sweetened beverages
 - Fast foods
 - Meat
 - Alcohol

Acculturation and Dietary Intake

Draft Key Findings

- In adults of Latino/Hispanic national origin, cross-sectional evidence suggests that higher acculturation to the US is associated with lower adherence to dietary guidelines.
 - Among adults of Latino/Hispanic national origin, primarily women and those of Mexican origin, higher acculturation is consistently associated with lower fruit and vegetable intake, as well as higher intake of fast foods, and sugar sweetened beverages.
 - In children and youth of Latino/Hispanic national origin, emerging evidence from two cross-sectional studies suggests an association between acculturation and diet behaviors.
 - A study with 3-5 year olds (proxied by caregiver acculturation) indicated an association with higher sweets intake and a study among adolescents, indicated an association with higher intake of fast foods.

Acculturation and Dietary Intake

Draft Key Findings

- Among Asian populations, emerging evidence from a very small number of cross-sectional studies suggests that higher acculturation to the US is associated with lower adherence to dietary guidelines.
 - A limited number of studies among Asian populations (mainly Korean, Chinese and Filipino) suggest higher acculturation is associated with higher fast food, as well as lower soy and traditional food consumption.
- Insufficient evidence is available among children, Asians in general, and those of Latino/Hispanic national origin regarding the association between measures of acculturation and dietary intake.

Acculturation and Dietary Intake

Draft Conclusion Statement

- Limited evidence from cross-sectional studies suggests that in adults of Latino/Hispanic national origin, particularly women and those of Mexican origin, higher acculturation to the US is associated with lower fruit and vegetable intake, as well as higher intake of fast foods and sugar-sweetened beverages.
 - Insufficient evidence is available among children, Asians in general, and among populations for diverse Latino/Hispanic national origin, regarding the association between measures of acculturation and dietary intake.

DGAC Grade: Limited

Acculturation and Body Weight

2. What is the relationship between acculturation, as measured by acculturation scales or proxies for acculturation, and body weight?

Acculturation and Body Weight

Description of the Evidence

- 12 studies were included in this review:
 - Study design: 11 cross-sectional, 1 longitudinal study
 - Populations: 7 Asian populations, 5 Latino/Hispanic populations (4 Mexican American and 1 Puerto Rican); adults (~35-75 y); 4 studies analyzed by gender
 - Location: 2 national sample; 5 from California, one each from Hawaii, Louisiana, Maryland, Massachusetts, New York; 2 studies included samples from country of origin (Vietnam and Korea)
 - Risk of bias: related to exposure/outcome measures; lack of adjustment for energy intake and physical activity

Acculturation and Body Weight

Description of the Evidence

- Acculturation measures differed substantially
 - Multidimensional scales used in 5 studies with Asian populations and 1 study with Latino/Hispanic population
 - Proxy measures used in 4 studies with Latino/Hispanic populations and 2 studies with Asian populations
 - One study used both an acculturation scale and proxies
- Self-reported measures of height and weight used in 5 of 12 studies
- Outcomes assessed
 - Body weight
 - Waist-hip ratio
 - Prevalence of overweight/obesity

Acculturation and Body Weight

Draft Key Findings

- Among Asian populations, the relationship between acculturation and higher body weight appears positive, but results are not consistent.
- Among Latinos/Hispanic populations, the association has been documented mostly among women of Mexican origin.

Acculturation and Body Weight

Draft Conclusion Statement

- Limited evidence suggests that there is a relationship between higher acculturation to the US and body weight status.
 - This relationship may vary by national origin and gender.

DGAC Grade: Limited

Acculturation and Risk of Cardiovascular Disease (CVD)

3. What is the relationship between acculturation, as measured by acculturation scales or proxies for acculturation, and risk of cardiovascular disease?

Acculturation and Risk of CVD

Description of the Evidence

- 6 studies were included in this review:
 - Study design: 6 cross-sectional studies
 - Populations: 5 Latino/Hispanic populations and 1 multicultural population; adult men and women (40-60 y)
 - Location: data predominately derived from large, multi-state or national data sets
 - Risk of bias: related to exposure/outcome measures

Acculturation and Risk of CVD

Description of the Evidence

- Acculturation measures differed substantially
 - 3 studies used differing multidimensional scales
 - 3 studies utilized acculturation proxies including: duration of US residence, language, and place of birth
- Outcomes assessed
 - Number of CVD risk factors
 - Blood lipid levels
 - Blood pressure
 - Hypertension
 - Self-reported CHD or stroke

Acculturation and Risk of CVD

Draft Key Findings

- 3 studies found a positive relationship between language acculturation and elevated blood lipid levels, but results varied by acculturation indicator.
- 2 studies assessed the association between acculturation and blood pressure in Latino/Hispanic populations and no association was found.
- 2 studies assessed the relationship between acculturation and hypertension in Latino/Hispanic and a multicultural population and found no association.

Acculturation and Risk of CVD

Draft Key Findings

- 2 studies suggest a positive association between language acculturation and overall CVD risk, but results varied as a function of language acculturation indicator used.
- The studies used different methods to assess acculturation including three studies which used multidimensional scales and 3 studies that relied on the assessment of acculturation proxies.
- The preponderance of evidence was in Hispanic/Latino populations and predominately Mexican American populations, but other Hispanic/Latino national origin groups were represented.

Acculturation and Risk of CVD

Draft Conclusion Statement

- There is limited evidence from a small number of cross-sectional studies conducted in Latino/Hispanic populations suggesting a positive relationship between language acculturation and elevated blood lipid levels and no relationship between acculturation and blood pressure.
- Insufficient evidence is available for other race/ethnic populations and among children for these outcomes and other CVD outcomes.

DGAC Grade: Limited

Acculturation and Risk of Type 2 Diabetes (T2D)

4. What is the relationship between acculturation, as measured by acculturation scales or proxies for acculturation, and risk of type 2 diabetes?

Acculturation and Risk of T2D

Description of the Evidence

- 4 cross-sectional studies were included in this review:
 - 2 studies used NHANES data (Hispanic/Latino subjects)
 - 1 study used Multi-Ethnic Study of Atherosclerosis (MESA) (Mexican, other Hispanic and Chinese)
 - 1 study used the Boston Puerto Rican Health Study
- Risk of bias: use of acculturation proxies and failure to test for effect modification by healthcare access
- Outcomes assessed
 - Elevated blood glucose
 - Pre-diabetes
 - Diabetes prevalence

Acculturation and Risk of T2D

Draft Key Findings

- The studies used different methods to assess acculturation.
 - 4 different multidimensional scales were used and 1 study relied on the assessment of two acculturation proxies.
 - All measures took into consideration language usage.

Acculturation and Risk of T2D

Draft Conclusion Statement

- Conclusions regarding the relationship between acculturation and type 2 diabetes cannot be drawn.
 - This is due to limited evidence from a very small number of cross-sectional studies, and study populations, and limitations in acculturation assessment methodology, effect modifiers, and outcomes measured.

DGAC Grade: Grade not assignable

Acculturation

Draft Research Recommendations

- Prospective cohort studies that begin during childhood and continue across the lifespan.
- Examine immigrant populations from other regions and countries throughout the world.
- Include research measured rather than self-reported chronic disease outcomes.
- Explore potential effect modifiers such as gender, country of origin, urban versus rural location of origin, education level and level of health care access.
- Development of tools to assess multidimensional acculturation across multiple cultural groups.

Acculturation and Dietary Intake

Draft Implication Statement

- Acculturation provides important information about:
 - Dietary habits
 - Risk of excessive body weight
 - Cultural aspects including language preferences
- Acculturation research has important implications for
 - Dietary Guidelines **dissemination**
 - Dietary Guidelines **implementation**

Acculturation

1. What is the relationship between acculturation and measures of **dietary intake**?
2. What is the relationship between acculturation and **body weight**?
3. What is the relationship between acculturation and risk of **cardiovascular disease**?
4. What is the relationship between acculturation and risk of **type 2 diabetes**?
5. What is the relationship between acculturation and prevalence of breast, prostate, lung, colon cancer and **total cancer mortality**?
6. What is the relationship between acculturation and risk of **adverse pregnancy outcomes** including low birth weight, very low birth weight, small for gestational age, prematurity, preeclampsia, and eclampsia?

Discussion

Eating Out

Eating Out Question

7. What is the relationship between eating out and/or take away meals and body weight in children and adults?

NEL Systematic Review to update 2010
DGAC

Eating Out Background

2015 Systematic Review Question:

- What is the relationship between eating out and/or take away meals and body weight in children and adults?

2010 Systematic Review Questions:

- What is the relationship between eating out and adiposity in children?
- What is the relationship between eating out and body weight in adults?

Rationale for change:

- Increased popularity in take away meals lead to inclusion of this concept in the 2015 systematic review question. The 2015 DGAC is interested in exploring the impact of eating out at a range of food outlets (i.e., quick serve, casual, formal restaurants, grocery take out).
- Review targets both children and adults and data will be evaluated by age group. This change was made to promote efficiency.

Analytical Framework: Eating Out

Target Population

Children (2 to 18 years) and adults, healthy and at risk for chronic disease

Intervention/Exposure

Frequency of eating out or take away food meals
Types of food outlets when eating out or food taken home (i.e., quick serve, casual, formal restaurant)

Comparator

Different types of food outlets
Different frequency of meals eaten out or as take away meals

Intermediate Outcomes

Adults:

- BMI
- Waist circumference
- Weight change
- % body fat mass

Child growth indices:

- Weight-for-age, Length/stature-for-age, weight for stature
- BMI-for-age, BMI z-score

Key Confounders

- Total energy intake
- Dietary intake
- BMI
- Age
- Race/ethnicity
- Sex
- SES
- Physical activity
- Baseline overweight status (longitudinal studies)
- Familial factors, e.g., family connectedness and weight-specific pressures within the home
- Parent employment status
- Parent work-life stress

Endpoint Health Outcomes

- Incidence of healthy weight, overweight, obesity

Key Definitions: Eating out and take away meals --NEL will document authors' definitions, types of food outlets and take-away foods

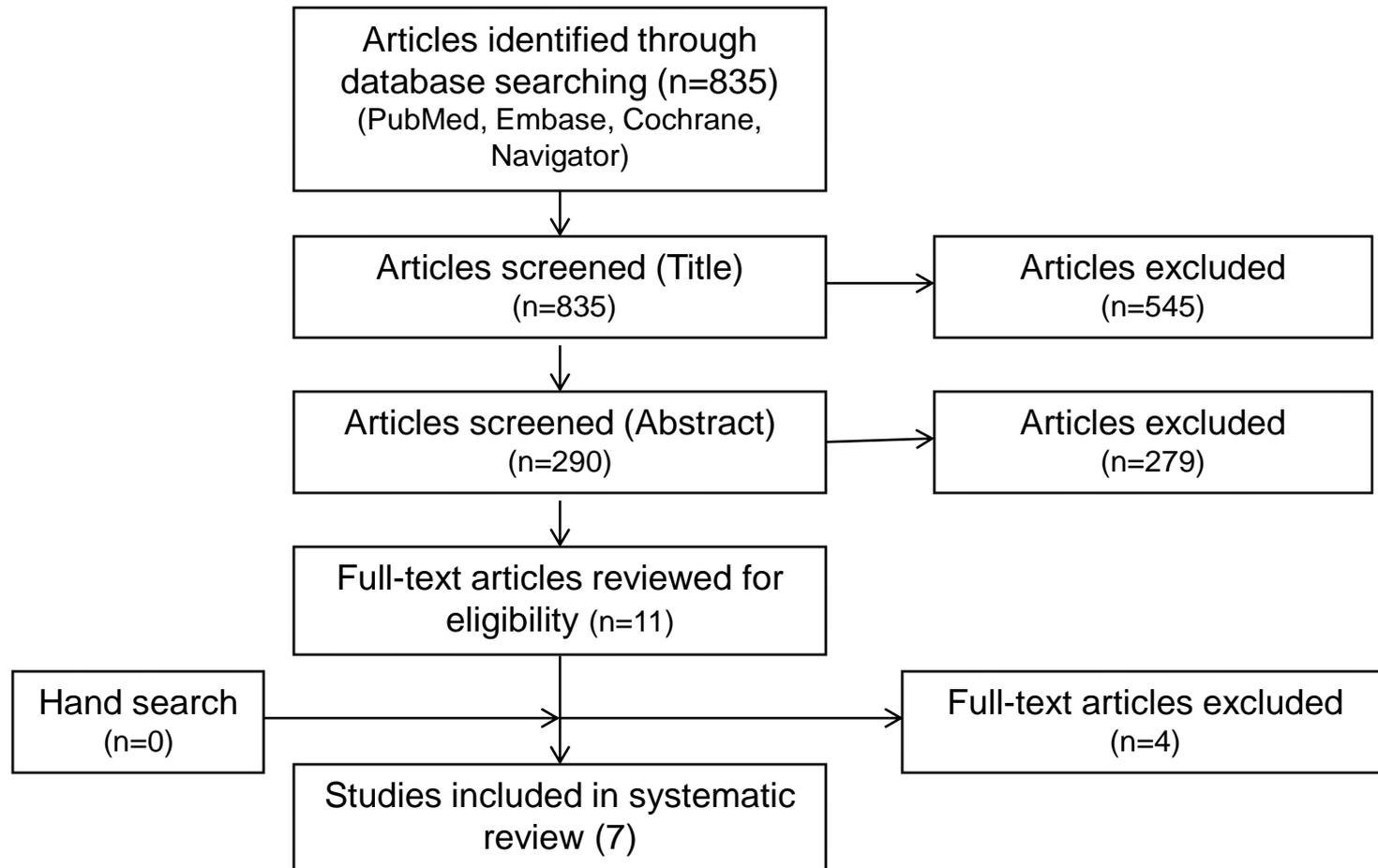
Eating Out

Literature Search: Inclusion/Exclusion Criteria

- English language peer-reviewed articles 2010 DGAC 2000-2010; 2015 DGAC Jan 2010 – Apr 2014
- Human subjects > 2 y
- Healthy or with elevated chronic disease risk (excluded studies with all subjects diagnosed with disease)
- International population from high or very highly HDI countries
- Prospective cohort, randomized controlled trials, crossover trials, non-randomized controlled trials
- Frequency and type of eating out/take away food meals
- Body weight intermediate and health outcomes

Eating Out Update

2014 Literature Search Results



2010 DGAC Eating Out Review search strategy and results available at www.NEL.gov

Eating Out

Description of the Evidence

- 16 prospective studies (14 cohorts) were included in this review:
 - Adults: 7 studies (4 cohorts)
 - 5 conducted in the US and 1 in Spain
 - Study size: 891-19,479 subjects
 - Age: primarily < 40y
 - Some ethnic diversity
 - Children: 8 studies
 - 4 conducted in US, others in Canada, UK, Australia, Spain, China
 - Age: Primarily 9-16 y
 - Ethnic/racial diversity in US studies
 - Transition from adolescence to adulthood: 1 study

Eating Out

Description of the Exposure

- Adults
 - 5 studies assessed frequency of fast food (3 cohorts)
 - Specific foods consumed not assessed
 - 1 study focused on “local” fast food intake
 - Food intake not assessed
 - 1 study assessed meals away from home
 - 1 study in African American women assessed intake of 6 specific foods
 - Burgers, pizza, fried chicken, fried fish, Mexican food and Chinese food
- Restaurant/cafeteria intake assessed in CARDIA cohort (2 studies)

Eating Out

Description of the Exposure

- Children
 - Generally one or two questions used to assess
 - Frequency of fast foods addressed by all studies
 - 7 studies specifically assessed frequency of fast food consumption (chains/restaurant characteristics may be listed)
 - 1 study used FFQ for fries, burgers, fried chicken and converted to a weekly fast food intake index
 - 1 study assessed fried foods away from home
 - 1 study location of breakfast (away from home/home/skip)
 - 1 small study assessed type of food outlet

Eating Out and Body Weight Results in Adults

Body Weight Outcome	Studies with Positive Association	Studies with No Association	Studies with Inverse Association
BMI	Bes-Rastrollo, 2010 (meals away from home) Duffey, 2007 (fast food) CARDIA)	Duffey, 2007 (restaurant food)	
Overweight/ Obesity	Bes-Rastrollo, 2010 (meals away from home) Boggs, 2013 (Hamburgers)		
Weight/ Weight Change	Bes-Rastrollo, 2010 (meals away from home) Duffey, 2009 (fast food) (CARDIA) Pereira, 2005 (fast food) in black & white subjects) (CARDIA) French, 2000 (fast food) Li, 2009 (local fast food)	Duffey, 2009 (fast food)	

Eating Out and Body Weight Results in Children

Body Weight Outcome	Studies with Positive Association	Studies with No Association	Studies with Inverse Association
BMI	Fraser, 2012 (fast food) Tin, 2012 (breakfast away from home) Taveras, 2005 (fried foods away from home) Thompson, 2004 (quick-service food)	Laska, 2012 (fast food) MacFarlane, 2009 (take-away/fast-food meals) Thompson, 2004 (coffee shop and restaurant)	
Overweight/Obesity	Fraser, 2012 (fast food) Bisset, 2007 (fast food)	MacFarlane, 2009 (take-away/fast-food meals) Haines, 2007 (fast food) (incidence of overweight analysis)	Haines, 2007 (fast food) (persistent overweight) girls, not boys
Percent Body Fat	Laska, 2012 (fast food) females not males Fraser, 2012 (fast food)	Laska, 2012 (fast food) males, not females	

Eating Out and Body Weight Results in Adolescents Transitioning to Adulthood

Body Weight Outcome	Studies with Positive Association	Studies with No Association	Studies with Inverse Association
BMI	Niemeier, 2006 (fast food)		

Eating Out

Key Findings, Conclusion Statements

Under development

Eating Out

What is the relationship between eating out and/or take away meals and body weight in children and adults?

Discussion

Mobile Health

Mobile Health (mHealth) Questions

1. What is the relationship between use of mHealth technology (e.g. cell texting, i-phones/tablets apps), alone or in combination with traditional group sessions or face-to-face counseling, and **dietary behaviors** (foods, food groups, dietary quality indices, macronutrient intakes and proportions)?
2. What is the relationship between use of mHealth technology alone or in combination with traditional group sessions or face-to-face counseling, and **body weight**?

NEL Systematic Review

Mobile Health (mHealth) Background

- Recent expansion in use of mHealth technologies (e.g., text messaging, mobile phone apps, remote monitoring, portable sensors):
 - Change in US health information and health care delivery.
 - Mobile technologies offer unprecedented opportunities to:
 - Improve the health of Americans
 - Reach traditionally underserved ethnic and racial populations
- 2013 AHA/ACC/TOS Guidelines for Management of Overweight and Obesity in Adults provide research recommendations on using mHealth technologies to improve comprehensive, high-intensity lifestyle interventions for weight loss:
 - More research needed that evaluates effective methods of delivering lifestyle interventions remotely (e.g., internet, mobile phone, text messaging, telephone, DVDs, etc., or some combination of these) to achieve and maintain clinically meaningful weight loss.

Analytical Framework: Mobile Health (mHealth)

Target Population

Adolescents and adults healthy and at risk for chronic disease

Intervention/Exposure

Mobile health (mHealth) technology (including cell texting, mobile digital devices/tablets apps)

Comparator

Different levels of exposure, types of Mobile health technology, and application alone or in combination with traditional group session and counseling approaches

Examine by age, gender, ethnic/racial group

Intermediate Outcomes

- Diet quality indices
- Foods/food groups
- Macronutrient intakes/proportions
- BMI
- Weight change, % body fat mass
- Child growth indices

Key Confounders

- Total energy intake
- SES
- Age
- Gender
- Ethnicity/race
- Physical activity

Endpoint Health Outcomes

- Incidence of healthy weight, overweight, obesity

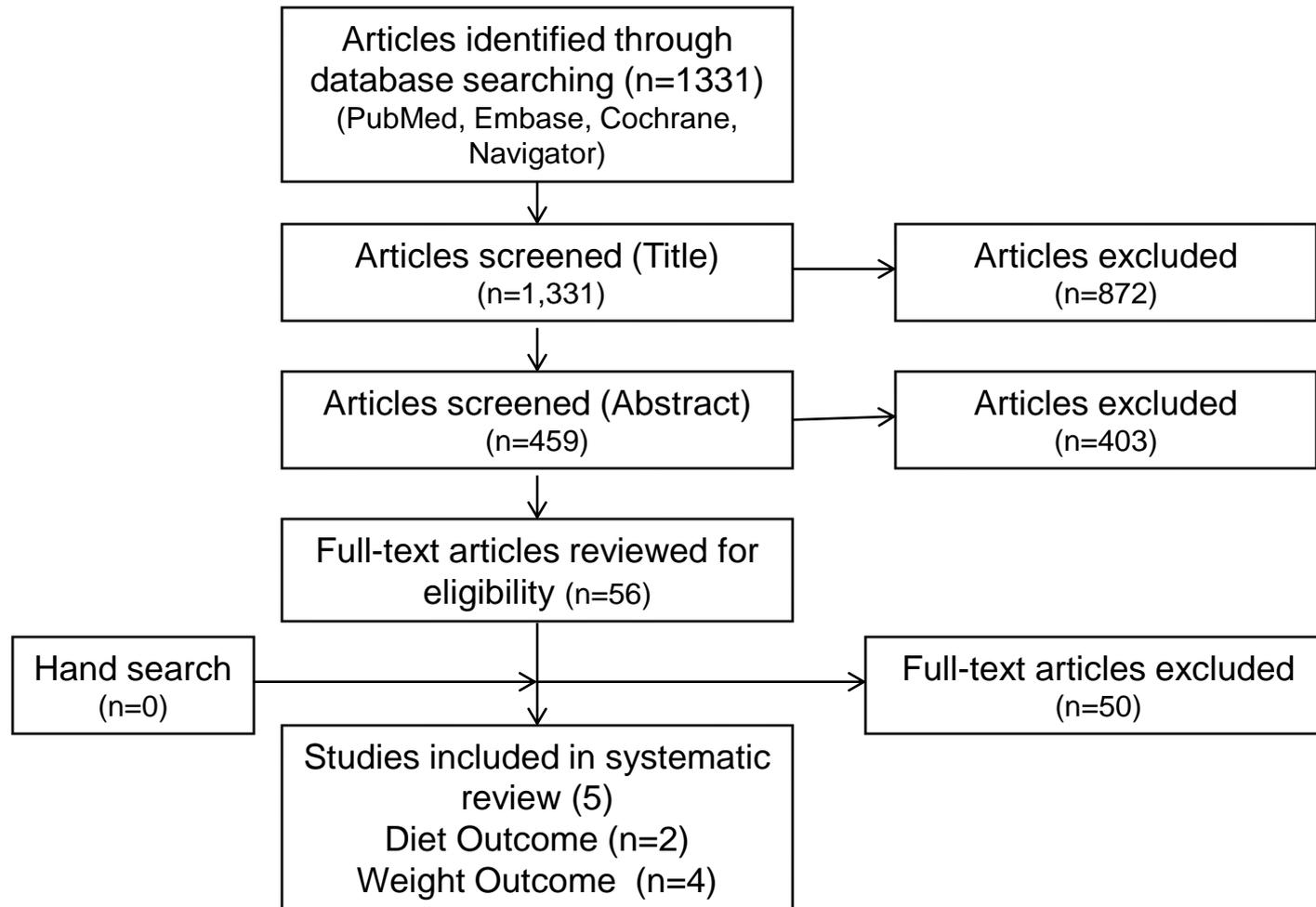
Key Definitions: Mobile health (e.g., “using mobile communications—such as PDAs and mobile phones—for health services and information:” UN Foundation); NEL will include study authors’ definitions .

Mobile Health (mHealth)

Literature Search: Inclusion/Exclusion Criteria

- English language peer-reviewed articles
- Human subjects, adolescents and adults
- International population from high or very HDI countries
- Healthy and those with elevated chronic disease risk (excluded studies with all subjects diagnosed with disease)
- Study design: randomized controlled trials, crossover trials, prospective cohort studies
- Size of study groups for intervention trials: ≥ 30 subjects per study arm
- Attrition/Dropout rate: for intervention trials, exclude if dropout rate $>20\%$ within 6 months and $>30\%$ beyond 6 months; differential dropout rate of $>15\%$ between groups within the first 6 months.

Mobile Health (mHealth) Literature Search Results



Mobile Health and Dietary Outcomes

Description of the Evidence

Two Randomized Controlled Trials in the US

- Study size: 86-180 subjects
- Age: middle-aged (mean range: 43-47 y)
- Gender: mostly women (75-85%)
- Racial/ethnic diversity: mostly white (76-78%)
- Subject characteristics: all overweight/obese
- Length of trial: 6 and 24 m
- Study populations:
 - Mobile Pounds Off Digitally (Mobile POD)
 - Self- Monitoring And Recording using Technology (SMART) Trial

Mobile Health and Weight Outcomes

Description of the Evidence

Four Randomized Controlled Trials in the US

- Study size: 86-180 subjects
- Age: middle-aged (mean range: 42-53 y)
- Gender: mostly women (59-85%)
- Racial/ethnic diversity, mostly white (64-94%)
- Subject characteristics: all overweight/obese
- Length of trial: 3-24 m
- Study populations:
 - Mobile Pounds Off Digitally (Mobile POD)
 - Self- Monitoring And Recording using Technology (SMART) Trial

Mobile Health & Dietary Outcomes

Study Description – all RCTs

- **Ambega, 2014:** Evaluated use of self-monitoring PDA with daily feedback compared to using a PDA only or use of a paper food diary (controls)
- **Turner-McGrievy, 2011:** Evaluated a combined of use of podcasts, mobile support communication and mobile diet monitoring, compared to receipt of podcasts only
 - Podcasts provided diet and physical activity information, goal setting and problem solving tips

Mobile Health & Weight Study Description – all RCTs

- **Burke, 2012:** Evaluated self-monitoring using a PDA only or PDA with daily feedback compared to use of a paper food diary (control)
- **Shapiro, 2012:** Evaluated a daily text-messaging weight loss intervention and text-messaging adherence compared to receipt of monthly e-newsletters (control)
- **Shaw, 2013:** Evaluated use of specialized targeted diet and weight related text messages compared to receipt of general health messages (control)
- **Turner-McGrievy, 2011:** Evaluated a combined use of podcasts, mobile support communication and mobile diet monitoring , compared to receipt of podcasts only

Mobile Health (mHealth) Dietary Outcomes

Weight Outcome	Studies with Positive Association	Studies with No Association
Reduction in Energy (kcal) Intake	Ambeba, 2014 (compared to control, 6 & 24 mo)	Turner-McGrievy , 2011 (at 0-3 mo & 3-6 mo)
Reduction in Total Fat Intake	Ambeba, 2014 (trend at 6 mo, compared to control)	Turner-McGrievy , 2011 (at 0-3 mo & 3-6 mo)
Reduction in Saturated Fat	Ambeba, 2014 (compared to control)	
Reduction in Added Sugar	Ambeba, 2014 (over time within group)	

Mobile Health (mHealth) Weight Outcomes

Weight Outcome	Studies with Positive Association	Studies with No Association
Weight Loss	<p>Burke, 2012 (for PDA+ feedback at 24 mos, wt loss > for those adherent \geq 60% vs. 30% of time)</p> <p>Turner-McGrievy, 2011 (short-term, modest weight loss)</p>	<p>Shaw, 2008 (sustained wt loss; between groups at 1 & 3 mos)</p> <p>Burke, 2012 (mean loss at 24 mos bet groups)</p> <p>Shapiro, 2012 (between groups)</p>
Weight Change		<p>Shaw, 2008 (between groups at 1 & 3 mos)</p>
Trajectory of Weight Loss		<p>Shaw, 2008 (between groups at 1 & 3 mos)</p>

Mobile Health (mHealth)

Draft Research Recommendations

1. Studies should assess the extent to which the use of mobile technologies impacts long-term adherence and attrition rates. Studies should document the percentage of subjects still participating in the mHealth intervention over short sequential periods of time (e.g., monthly after start of the intervention) and determine factors that affect adherence. Design studies to minimize attrition rates in the intervention and control arms.
2. Randomized controlled trials should be powered both for small effect sizes and relatively high attrition rates.

Mobile Health (mHealth)

Draft Research Recommendations

3. Studies, based on sound behavioral change theories, should test the effects of mobile health technologies on dietary and weight outcomes when used longer than 3 months and assess the sustainability of positive changes after the end of interventions.
4. Investigators are encouraged to use an "intent-to-treat" approach in their study designs and consider utilizing analytic plans that employ "Missing Not At Random" data imputation strategies.
5. Future studies should include larger study sample sizes, more heterogeneous populations, and include some of the under-represented ethnic/racial groups in the U.S. population.

Mobile Health (mHealth)

Next Steps

- Review literature in more detail with self-monitoring topic
- Self-monitoring question:
What is the relationship between use of self-monitoring strategies (focused on weight loss) and body weight outcomes (weight loss, maintenance, etc.) in adults and youth?

Mobile Health (mHealth)

1. What is the relationship between use of mHealth technology (e.g. cell texting, i-phones/tablets apps), alone or in combination with traditional group sessions or face-to-face counseling, and dietary behaviors (foods, food groups, dietary quality indices, macronutrient intakes and proportions)?
2. What is the relationship between use of mHealth technology alone or in combination with traditional group sessions or face-to-face counseling, and body weight?

Discussion

Next Steps: Questions to Address

1. Self-monitoring
2. Sedentary Behavior and Screen Time in Youth
3. Household Food Insecurity
4. Family/Shared Meals
5. Sleep
6. Food/Menu Labeling

Subcommittee 3: Diet and Physical Activity Behavior Change

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