Obesity, Cancer, and Weight Control Interventions in Rural Settings

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Disclosures

- Nothing to disclose
Death from Cancer Across Rural and Urban Counties, National Vital Statistics

**Age-adjusted cancer death rates among all ages by year**

- Diagnosis at later stage
- Access to care issues
- Higher rates of tobacco use
- Higher rates of obesity
- Lower screening rates
- Higher co-morbidities
13 cancers linked to obesity

NATIONAL CANCER INSTITUTE
Cancers Associated with Overweight & Obesity

- Meningioma (cancer in the tissue covering brain & spinal cord)
- Adenocarcinoma of the esophagus
- Multiple myeloma (cancer of blood cells)
- Kidney
- Endometrium (cancer in the tissue lining the uterus)
- Ovary
- Thyroid
- Breast (postmenopausal women)
- Liver
- Gallbladder
- Upper stomach
- Pancreas
- Colon & rectum

cancer.gov/obesity-fact-sheet
Adapted from Centers for Disease Control & Prevention
Obesity at cancer diagnosis linked to prognosis for 7 cancer types

- Breast
- Prostate
- Colon
- Ovarian
- Endometrial
- Renal
- Multiple myeloma
Rural-Urban Obesity Disparity

Severe obesity increasing at a rate 3x greater in rural versus urban counties

Befort et al., 2012 NHANES 2005-2008; J Rural Health
Hales, 2018, NHANES 2001-2016; JAMA

2014 Rural-Urban Chartbook
2010-2011 NHIS
Rural-Urban Obesity Prevalence by Region

2014 Rural-Urban Chartbook 2010-2011 NHIS
Drivers of rural obesity disparity

- Older age and lower SES
- Physical activity and diet
  - Built and natural environment
  - Access barriers
  - Cultural patterns
Physical activity: NHANES

**Accelerometer MVPA**

- Urban (RUCA 1-3)
- Large rural (RUCA 4-6)
- Small rural (RUCA 7-10)

**Leisure Activity Checklist**

- Urban (RUCA 1-3)
- Large rural (RUCA 4-6)
- Small rural (RUCA 7-10)

**Household Activity**

- Urban (RUCA 1-3)
- Large rural (RUCA 4-6)
- Small rural (RUCA 7-10)

Fan et al., *Prev Chronic Dis* 2014 NHANES 2003-2006
Environmental barriers to physical activity

- Built environment
  - Less access to public parks and trails
  - Lack of well-maintained sidewalks and streets with wide shoulders or foot-paths
  - Neighborhoods perceived as unpleasant
  - Fewer PA facilities (shared use with schools, hospitals, and churches)

- Natural environment
  - Harsh weather (snow, heat, high winds)
  - Lack of shade

- Sociocultural environment
  - Less likely to encounter people exercising or walking for transportation

Hansen et al., 2015. *Current Obes Rep*
Wilcox et al. 2000. *J Epidemiol. Community Health*
Peterson et al., 2004. *J Community Health Nurs*
Food environment

• Small grocery stores with fewer and more costly selection of fresh produce and lean meats

• Access to convenience store and other fast foods

Creel et al., 2008. *BMC Public Health*

Liese et al., 2007. *J Am Diet Assoc*

Lendardson et al., 2015. *Curr Obes Rep*
Rural lifestyle intervention studies

- ~ 50 studies
  - ~ 15 RCTs
- African American population in South
- Hispanic population in Texas
- Predominantly White population in Midwest

Porter et al., 2018. *Obesity Reviews*
How do we reach rural residents?

On-site
- Churches
- Cooperative Extension Service
- Schools
- Primary care

Off-site
- Phone
- Tele-video
- Web/Mobile app
Trials from the rural Midwest

- Breast cancer survivors: Rural Women Connecting trial
- Primary care patients: RE-POWER trial
Group vs. individual phone-based weight loss trial for rural women

N = 34
White
age 48 ± 11

• Match to treatment preference did not influence weight loss
• Group arm rated support, accountability, and information sharing as most helpful
Weight loss maintenance among rural breast cancer survivors

210 rural breast cancer survivors
stage 0-IIlc in past 10 years, BMI 27-45, medical clearance

0-6 months
Weekly group phone sessions

85% lost ≥ 5%, n = 172
randomized to Phase II

6-18 months
Bi-weekly group phone sessions

6-18 months
Bi-weekly mailed newsletter

Community Cancer Centers
Recruitment

- Oncology referrals and mailings
  - 721 cases screened
    - 84% from mailed brochure
    - 11% advertisements, friend referrals, outreach
    - 5% physician referral
  - 29% enrollment rate of those screened

Befort et al., *Contemp Clinical Trials*, 2014
Weight changes by treatment group

<table>
<thead>
<tr>
<th></th>
<th>Group Phone Counseling (n = 85)</th>
<th>Newsletter Comparison (n = 83)</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight change 6 to 18 months</td>
<td>3.3 (4.8)</td>
<td>4.9 (4.9)</td>
<td>0.03</td>
</tr>
<tr>
<td>Within 3% of 6 month weight</td>
<td>42.4%</td>
<td>20.5%</td>
<td>0.003</td>
</tr>
<tr>
<td>( \geq 5% ) below baseline weight</td>
<td>75.3%</td>
<td>57.8%</td>
<td>0.02</td>
</tr>
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</table>

Lessons learned

- Group-based phone interventions can engage rural breast cancer survivors and may address unmet support needs
  - 90% attendance in phase 1; 60% attendance in phase 2
  - 6 month process interviews (n = 186):
    - Accountability to group seen as one of most helpful components
    - Group cohesion and enjoyment of calls varied substantially
- Strategies needed to enhance referrals and participation rates from local oncology settings

What is best setting for reach and sustainability?

Efficacy Trials

Effectiveness Trials

Explore contexts and settings

Adopt in practice settings

Implement in practice settings

Sustain and evolve in practice settings

Implementation studies

Landsverk et al. In Brownson, Colditz, and Proctor, 2012. Dissemination and Implementation in Health: Translation Science to Practice
Obesity treatment falls short in primary care practice

- Only 20-40% of patients get diagnosed and counseled
- Wide variation in counseling methods
- Training gap for health professionals
- Variable insurance coverage for guideline-based care based on BMI diagnosis

Fitzpatrick 2017 *Prev Med.*
Intensive Behavior Therapy for Obesity Medicare Claims

- Intensive Behavior Therapy (IBT) for Obesity authorized by Medicare in 2011
  - Face-to-face, 15 minutes, ~$27/session
  - 14 sessions in 6 months
  - If > 3 kg loss, continue with monthly sessions

- <1% of eligible beneficiaries received IBT for Obesity

Source: Kaiser Health News, USA Today, 2013
Models to Address Obesity in Primary Care

Fee-for-service
- In-clinic individual visits
- Medicare Intensive Behavioral Therapy
  - 15 minutes
  - Weekly for 1 month
  - Bi-weekly for 5 months
  - Monthly for 18 months

Patient-Centered Medical Home
- Team-based care, with clinic-employed lifestyle coach
- Enhanced access (after hours)
- In-clinic group visits
  - 60 minutes
  - Weekly for 3 months
  - Bi-weekly for 3 months
  - Monthly for 18 months

Disease Management
- Referral to centralized phone-based care
- Integration with PCP through quarterly progress reports
- Phone group visits
  - 60 minutes
  - Weekly for 3 months
  - Bi-weekly for 3 months
  - Monthly for 18 months

All models include behavioral lifestyle intervention tailored to rural setting
36 practices
n=1407 patients

BMI 30-45 kg/m²
Age 20-75 years
PCP clearance

Fee for Service
12 practices
n=473

Patient Centered Medical Home
12 practices
n=468

Disease Management
12 practices
n=466

Primary Outcome: Weight change at 2 years
Secondary Outcomes: Quality of life, sleep, stress, metabolic syndrome, implementation process measures
Pragmatic elements

• **Few patient exclusions**: 87% eligibility rate, 86% participation rate

• **Clinic-employed staff in FFS and PCMH arms**: identified locally, range of backgrounds

• **Pragmatic training model**: CME session, manuals and hand-outs, one day interactive workshop for group counselors + optional telementoring
Recruitment and Retention

Clinic referrals and targeted mailings

- Median 40 patients per clinic (range 34-44)
- Referral source
  - 66% mailing (range 26-99%)
  - 22% in clinic referrals (range 0-98%)
  - 11% media, family/friends (range 0-53%)
- Retention
  - 92% at 6 months
  - 87% at 2 years
Participant characteristics (n = 1407)

- Age: 55 ± 12 years
- BMI: 37 ± 4 kg/m²
- 77% female, 96% White non-Hispanic
- 46% isolated rural; 18% small rural; 35% large rural
- Medical conditions
  - 46% hypertension
  - 39% depression/other mental health
  - 34% arthritis
  - 24% diabetes
  - 10% cancer
- Travel time to clinic = 17 ± 19 min
- 34% reported no prior assistance

Patients enrolled vs mailed to:
- Women (77% vs 56%)
- Older (54.1 vs 51.3 years-old)
- Higher BMI (36.5 vs. 35.6)

Bafort et al., *BMC Fam Pract* 2020
Clinic Stakeholders and Patient Advisory Board

What I Wish My Doctor Really Knew: The Voices of Patients With Obesity

Johnstone et al., Ann Fam Med 2020
Opportunities and challenges

- Use of multiple referral approaches leads to adequate patient uptake, but strategies are needed for increasing uptake among men
- Perceived travel burden to in-clinic visits among rural residents may be lower than assumed
- Innovative and uniform payment models needed
- Novel telemedicine approaches may address gaps in staffing and care coordination
Collaborators

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