

### Evaluation of Point of Purchase Labeling to Improve Health Literacy and Healthy Eating Choices

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**Learning Outcome:** Learner will be able to define point of purchase labeling and how it can benefit the public's nutrition choices.

**Background:** The purpose of this study was to evaluate the influence of red, yellow, and green (R/Y/G) point of purchase labeling system on perceived health literacy and purchasing behaviors at three on-campus eateries frequented by university faculty and staff.

**Methods:** Foods were rated as R/Y/G based on the NRFL. All foods were labeled with stickers that looked like miniature traffic lights with the appropriate color light lit up on menu boards. Posters, emails and table tents were also utilized. The first eatery had the intervention for six weeks, the second for four weeks, and the last for two weeks.

**Results:** Eatery patrons (N=191) completed a pre-intervention survey assessing healthy eating intentions, knowledge, and behaviors. Post-intervention data collection was conducted via online survey (N=89), and consisted of the pre-test items and additional questions. The intervention did not appear to influence healthy eating intentions or knowledge, 41.6% of the patrons reported being aware of, understanding, and using the labels. The average food sales for the six weeks prior to the intervention were compared to the average food sales during the intervention. Food sales data were compared by location and food category (R/Y/G). There was a significant increase in total green sales and a significant decrease in total red sales ( $r=-.375$ ,  $p=.044$ ), but no significant differences between locations.

**Conclusions:** This study demonstrates that utilizing a low health literacy label provides an understandable method for communicating healthy options.

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### Vegetable Gardening is Associated with Greater Produce Intake in Women Attending an OB-Gyn Clinic in Rural Appalachian Ohio

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**Learning Outcome:** After this presentation, the learner will be able to describe the household food security, gardening habits, and produce intake of adult women living in rural Appalachian Ohio and attending an OB-Gyn clinic.

**Background:** Gardening has been associated with food security in rural Appalachian Ohio and may improve nutrition outcomes.

**Outcomes:** This study examined household adult food security (HAFS), gardening habits, and produce intake of women living in rural Appalachian Ohio and attending an OB-Gyn clinic.

**Methods:** Survey of females  $\geq 21$  years [USDA HFS module, gardening behaviors]. HAFS was calculated using standardized methods. A dichotomous variable was also calculated for HAFS [food secure (high HAFS); any indication of food insecurity (marginal, low, or very low HAFS)]. Pearson Chi-squared test was used to assess for differences in gardening between HAFS groups. Independent Samples t-test was used to assess for differences in produce intake between gardeners/non-gardeners.

**Results:** Participants ( $n=153$ ) were  $29\pm 8$  years. They ( $n=150$ ) primarily lived in food secure homes ( $n=113$ , 75.3%), although 37 (24.7%) lived in homes characterized by marginal, low, or very low HAFS. 57/151 (37.7%) gardened vegetables, and 46/150 (30.7%) gardened fruit. Vegetable gardeners, compared to non-vegetable gardeners, consumed more vegetable ( $2.5\pm 1.2$  vs.  $1.9\pm 1.0$ ;  $p=.003$ ) and total produce ( $4.8\pm 2.1$  vs.  $3.8\pm 1.8$ ;  $p=.003$ ) servings daily, but fruit intake did not differ ( $p=.074$ ). Gardening fruit had no impact on produce intake between groups ( $p>.05$ ). Gardening habits did not differ by HAFS status ( $p>.05$ ).

**Conclusions:** Female vegetable gardeners living in rural Appalachian Ohio and attending an OB-Gyn clinic consume more vegetable and total produce daily, compared to non-vegetable gardeners. Teaching gardening principles may encourage improved produce intake among women. Further exploration of gardening interventions to improve dietary habits is needed in rural Appalachia.

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### The Relationships between Missing Teeth and/or Dental Prostheses and Indicators of Nutritional Status in Older Adults: A Systematic Review

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**Learning Outcome:** The learner will be able to describe the associations between missing teeth, the use of dental prostheses, malnutrition risk and weight status in community dwelling older adults.

**Objectives:** This systematic review explored associations between missing teeth, with or without replacement prostheses, and nutritional status in community-dwelling older adults using the Mini Nutritional Assessment (MNA) as an indicator of malnutrition risk and Body Mass Index (BMI) as an indicator of weight status.

**Design:** Systematic Review (SR) of human studies.

**Methodology:** Medline, CINAHL and Cochrane Libraries were systematically searched to identify articles published between January 2000-February 2014 meeting inclusion criteria. Data were abstracted and synthesized in narrative and summary tables, risk of bias analysis was performed, and PRISMA guidelines were followed.

**Results:** Of the 22 studies meeting inclusion criteria, five explored MNA, 15 examined BMI and one study explored both BMI and MNA. Five of eight studies that assessed MNA score identified significant relationships between MNA score and tooth loss. MNA scores were significantly lower in those with fewer teeth or limited occlusion as compared to those with more teeth and/or more posterior occluding teeth pairs. In individuals with missing teeth/limited occlusion, MNA score increased significantly following the provision of dentures. Eight of 15 studies identified significant relationships between BMI and tooth loss. Individuals who were missing more teeth and/or had limited occlusion were more likely to be underweight or obese.

**Conclusions:** Of the 22 studies reviewed, 13 support relationships between missing teeth, teeth replaced with prostheses, weight status and malnutrition risk; individuals with fewer teeth and poorer occlusion are at increased risk of non-normal weight status and malnutrition. However study results were inconsistent and limited by methodological heterogeneity.

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### Impact of Obesity on Health Care Costs in Adults Over 65 Years of Age

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**Learning Outcome:** Participants will be able to explain the costs associated with obesity in a population of older adults with fee-for-service Medicare.

**Objective:** Obesity is a risk factor for a variety of chronic conditions and is a significant contributor to preventable medical expenses. The objective of this study was to evaluate the impact of weight, as a function of body mass index (BMI), on total health care costs.

**Design:** 53,286 adults with an AARP® Medicare Supplement Insurance Plan insured by UnitedHealthcare Insurance Company (for New York residents, UnitedHealthcare Insurance Company of New York) in 10 states were surveyed.

**Methods:** Following adjustments for survey non-response bias and insurance status, we estimated health care utilization (inpatient and emergency room admissions) of 9,484 eligible respondents using multivariate logistic regression models. Subsequently, an exponential conditional mean (ECM) regression model was used to estimate the impact of BMI on medical and pharmaceutical expenditures relative to the normal weight category. The models adjusted for available demographics, socioeconomic and insurance status.

**Results:** 23% of eligible respondents were obese. Relative to the normal weight category, annualized total health care costs were \$1495 greater for those in the obese weight category ( $p=0.03$ ). The majority of these costs were explained by chronic conditions likely associated with obesity. Most of these costs were attributable to the pharmaceutical management of these conditions.

**Conclusions:** Obese older adults cost 8.6% more compared to their normal weight counterparts. These largely preventable costs are primarily associated with the management of chronic conditions. With 23% of this population self-reporting obesity, this equates to an additional \$1.8 billion annually, mostly attributable to Medicare.

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