P97 Assessment of Nutrition Education and Health Status of Type 2 Diabetic Patients at a Government-owned Hospital, Lagos

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Objective: The study examined the influence of nutrition education on the health status of patients with type 2 diabetes treated at Gbagada General Hospital, Lagos.

Theory, Prior Research, Rationale: The incidence of diabetes is on the increase in Nigeria and uniform, documented nutrition education is lacking.

Study Design, Setting, Participants, and Intervention: A questionnaire and a 24-hour food recall were administered to 73 subjects.

Outcome, Measures and Analysis: The 24 hour dietary recall was used to collect data on energy and nutrient intake. The results were analyzed using descriptive statistics and percentages.

Results: Results showed that the mean change in weight and fasting blood sugar among patients was 8.57+9.04kg and 35+26.54mg/dl respectively. There were also differences between initial and final body mass index of the patients. The overall energy (kcal) intake was 1688.9+381.2, while calcium (mg) was 301.3+47.1; protein (g) was 50.5+7.9. More than half of the subjects were overweight/obese. The result showed that though the nutrition education given by the hospital is inadequate/minimal, nutrition education had a significant ($r=0.713$) positive correlation with the health status of the patients.

Conclusions and Implications: It is recommended that a wider choice of indigenous foods be included in the list of diabetic foods with special emphasis on portion control techniques. Obesity prevention and weight management programs need to be designed and implemented since many patients were either obese or overweight.

Funding: None.

P98 Community-based Nutrition Education Improves Knowledge, Attitudes, and Behaviors Related to Fruit and Vegetable Consumption

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Objective: The objectives of this study were to identify determinants of fruit and vegetable consumption and assess the effectiveness of a 10-week community nutrition education program on improving knowledge, attitudes, and behaviors related to fruit and vegetable consumption among obese adults.

Theory, Prior Research, Rationale: Knowledge, beliefs, and availability have been shown to be determinants of successful behavior change related to fruit and vegetable

consumption. However, few studies to date have examined the effects of nutrition education and provision of fruits and vegetables on changes in fruit and vegetable-related knowledge, attitudes, and behaviors.

Study Design, Setting, Participants, and Intervention: Fifty-four adults (35 women; age 44.7 ± 12.1 y; body mass index 33.2 ± 7.7 kg/m²) were randomly assigned to 1 of 3 intervention groups. The control group received no intervention, the education group attended weekly nutrition lessons, and the fruit and vegetable group attended weekly nutrition lessons and received 1 serving of fruits and 2 servings of vegetables daily for 10 weeks.

Outcome, Measures and Analysis: Fruit and vegetable-related knowledge, attitudes, and behaviors were assessed at pre-test and post-test using 30-item questionnaires and analyzed using chi square tests for independence and follow-up pairwise comparisons.

Results: The main determinants observed to impact fruit and vegetable consumption included attitudes, knowledge, and exposure, more so than availability. Recipients of nutrition education, especially those who received fruits and vegetables, reported greater improvements in fruit and vegetable-related knowledge, attitudes, and behaviors compared to the control group.

Conclusions and Implications: Nutrition education interventions designed to improve fruit and vegetable consumption need to thoroughly address participants' attitudes, knowledge, and provide exposure to fruits and vegetables.

Funding: North Dakota State University.

P99 Happier Meals: How Changes in McDonald's Happy Meals Altered Food Choices

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Objective: In January 2012, McDonald's changed the Happy Meal in two ways: 1) by adding apple slices and reducing the French fries portion, and 2) promoting the selection of milk instead of soft drinks. How did these changes influence the choices of children, and did they have a ripple effect on what was ordered by their parents?

Theory, Prior Research, Rationale: This study builds on research on defaults and contagion.

Study Design, Setting, Participants, and Intervention: This involved 4.3 million sales receipts from 30 U.S. stores which compared transactions in June to August 2011 with those from June to August 2012.

Outcome, Measures and Analysis: Average calories, fat, sodium, sugar, and protein in Happy Meals ordered and in side items ordered by parents.

Results: The average child ordered 11% fewer calories (61 calories less). Their meal decreased in fat and sodium and doubled in protein (because of a 16.4% shift from soft drinks to chocolate milk). Interestingly, when children ordered meals, it also improved the order of their parent. Parents ordering value meals (combos) increased their likelihood of ordering apples from 1.1% to 7.2% and

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decreased the number of frozen desserts they purchased by 26.1%.

Conclusions and Implications: This is an illustration of how small changes dramatically improve choice. Positive win-win changes can lead the way to better eating behavior. For parents, it shows how what one family member chooses to order or eat can powerfully influence others either for better or for worse. This is a useful lesson both at restaurants and at home.

Funding: McDonald's Corporation.

P100 Fat Taxes Versus Vegetable Subsidies: Which Works Best in the Field?

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Objective: Could taxes on less healthy foods and subsidies non healthier foods alter grocery shopping behavior and eventually reduce obesity?

Theory, Prior Research, Rationale: This policy-level debate has largely been informed by estimated demand models and by the historical experience with tobacco but not with controlled field studies that allow causality to be examined over time.

Study Design, Setting, Participants, and Intervention: To address this, a 6-month field experiment was conducted in an American city of 62,000 where loyalty card shoppers from 233 households were recruited and randomly assigned to 1 of 4 price framing conditions: 1) less healthy foods were taxed 10%, 2) healthier foods were subsidized 10%, 3) a joint tax-subsidy condition, and 4) a control condition.

Outcome, Measures and Analysis: Household sales of food items were measured during each shopping trip and demographics were collected following the test period. Healthier and less healthy foods were categorized based on the Guiding Stars system.

Results: Over 6 months, when the 10% price difference was framed as a subsidy on the healthier foods, households purchased more of both healthy and less healthy foods ($p < .001$). Interestingly, when the 10% price difference was framed as a tax on the less healthy foods, households purchased less on all foods ($p < .01$), but this was only statistically significant for the healthy foods, not unhealthy ones ($p = .22$).

Conclusions and Implications: This research suggests that nutrition educators should advise their constituents not to overpurchase unhealthy items in a time of subsidies or to buy less of healthy items in a time of taxation.

Funding: NIH.

P101 From Coke to Coors: A Field Study of a Fat Tax and its Unintended Consequences

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Objective: Would the taxing of calorie-dense foods such as soft drinks help reduce obesity or lead to more nutritious lifestyles?

Theory, Prior Research, Rationale: This policy-level debate curiously neglects the contributions of behavioral economics to understanding consumer shopping behavior and the notion of tradeoffs.

Study Design, Setting, Participants, and Intervention: To examine this, a 6-month field experiment was conducted in an American city of 62,000 where half of the 113 households recruited into the study faced a 10% tax on calorie-dense foods and beverages and half did not.

Outcome, Measures and Analysis: Household sales of beverages were measured every trip and demographics were collected following the test period.

Results: The tax resulted in a short-term (1-month) decrease in soft drink purchases ($p = .04$), but no decrease over a 3-month or 6-month period ($p = .24$). Moreover, in beer-purchasing households, this tax led to increased purchases of beer ($p = .03$).

Conclusions and Implications: To nutrition educators, this underscores the importance of investigating unexpected substitutions. To public health officials and policy makers, this presents an important empirical result and more generally points toward wide ranging contributions that marketing scholarship can make in their decisions.

Funding: NIH.

P102 Fast Food or Fast Feet: Understanding the Relationship Between BMI, Calorie Source and Recreational Time Usage

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Objective: A simple calorie-in/calorie-out formula can be used to explain why many Americans are considered overweight or obese. In this study, we examine the impact that the calorie source (at home meals, fast food, traditional restaurants, etc.) and physical activity have on body mass index (BMI).

Theory, Prior Research, Rationale: This research complements work previously completed that analyzes the effect of fast food and physical activity on health outcomes.

Study Design, Setting, Participants, and Intervention: We use a nationally representative sample of 4585 respondents from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) to examine how calorie sources and physical activity are associated with BMI.