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Patient Education on Sweetened Beverages: an Interactive and Module- based Approach

Matthew Tsai, MS-III

St Johnsbury Community Health Center, VT

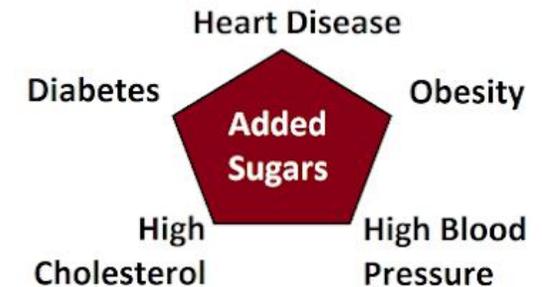
August – September 2019 | Mentor: Dr. Dana Kraus

Problem Identification

- “Added sugars” have been linked to several negative health outcomes, including diabetes, hypertension, high cholesterol, heart disease, liver disease, kidney disease and obesity in addition to production of ectopic fat [1-3]
- Sugary drinks are a leading source of added sugars in the U.S. and most Americans consume two to three times the maximum recommended daily sugar intake [1-2]
- On a given day from 2011-2014, 49% US adults reported drinking a sweetened beverage (68% of US adults living in Northeast) [2]

Public Health Cost

- The global economic burden of obesity alone was estimated to be ~\$2 trillion USD in 2014, including health care expenses, lost productivity, disability and mortality [4]
 - Other negative outcomes from excess sugar consumption would also add to this burden
- Considerations specific to Caledonia County, Vermont include [5]:
 - Higher prevalence of obesity
 - 28% vs statewide prevalence of 24%
 - Higher prevalence of heart disease related mortality
 - 169 per 100,000 die of heart disease (compared to 138 statewide)
 - Higher prevalence of diabetes related mortality
 - 105 per 100,000 die from diabetes (compared to 91 statewide)
 - Lack of primary care providers

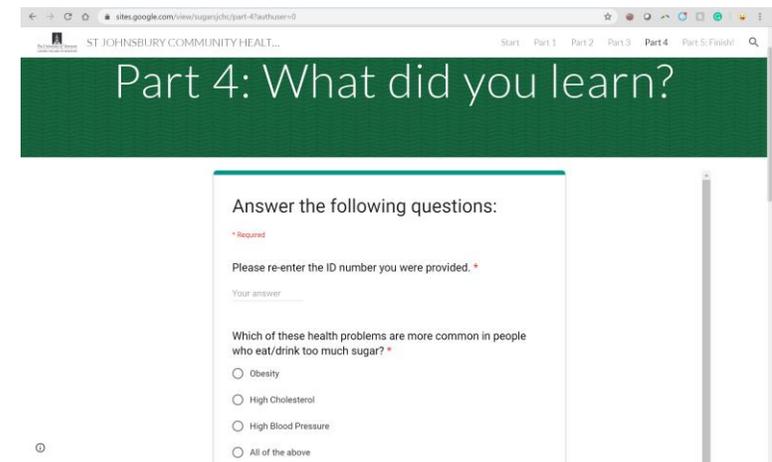
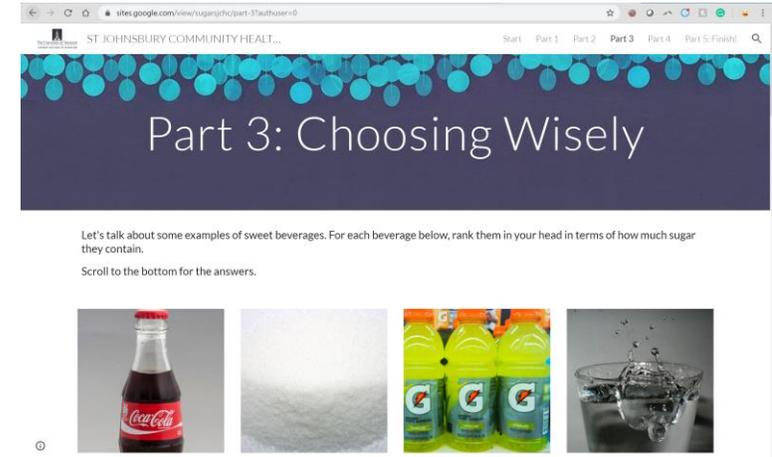


Community Perspectives

- “I think everyone could use this education. This intervention would only help improve patients’ choices at the grocery store. As a registered dietician, I know that shopping can be overwhelming. More nutrition education is needed because of the overwhelming marketing tactics that convince us things are healthy when they are not.”
-Alicia Armstrong RDN, LD, CDE
Diabetes & Nutrition Program Coordinator | St Johnsbury Community Health Center
- “Getting patients to stop drinking sugary beverages is one of the first steps in any patient with metabolic syndrome or diabetes. Patients often think of sodas when they think of sugary beverages, but it is so important for them to recognize what other sources of sugar they drink.”
-Dana Kraus, MD
Medical Director | St Johnsbury Community Health Center

Intervention and Methodology

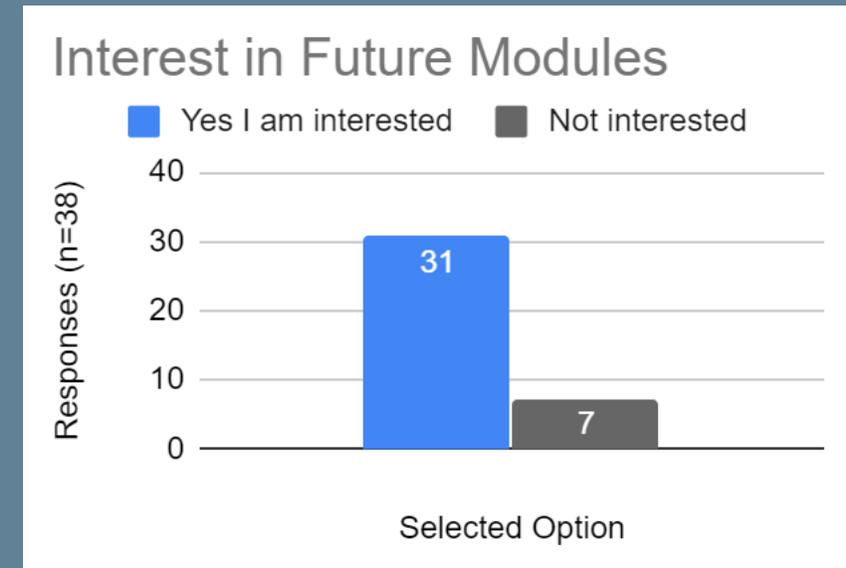
- Customized, reflective and interactive online module exploring health risks of high sugar consumption, nutritional content of popular sweetened beverages and healthier alternatives
- Includes the following evaluation measures (all data de-identified with an ID number):
 - Pre-intervention assessment
 - Post-intervention assessment
 - Module feedback survey
- Patients ≥ 18 yo receiving primary care at St. Johnsbury Community Health Center from 8/26/19 - 9/20/19 were offered the module on a computer tablet at the clinic. Additional recruitment of adult participants was conducted at the health center's booth during a town fair.
- Analysis conducted with Microsoft Excel. Module developed with GoogleSites.
- Module link: <https://sites.google.com/view/sugarsjchc>



Results: An Overview

- Providers expressed support for this resource given a high prevalence of diabetes or prediabetes in this patient population, in the setting of demanding clinic schedules that limited in-depth nutrition-centered discussions.
- A total of 42 subjects participated in the module, of which 38 provided feedback. Many reported the module to be educational and enjoyable. A majority indicated they found it to be an effective learning tool and would be interested in future modules. Other feedback included:
 - “Very informative”
 - “Good idea for educating rural area in health”
 - “Very easy to use. Attractive presentation”
 - “Interesting way to help patients become more aware of health impacts of various nutrient factors”

Average Age (Std Dev)	Sex
53.0 (14.4)	57% Female



Evaluation of efficacy & limitations

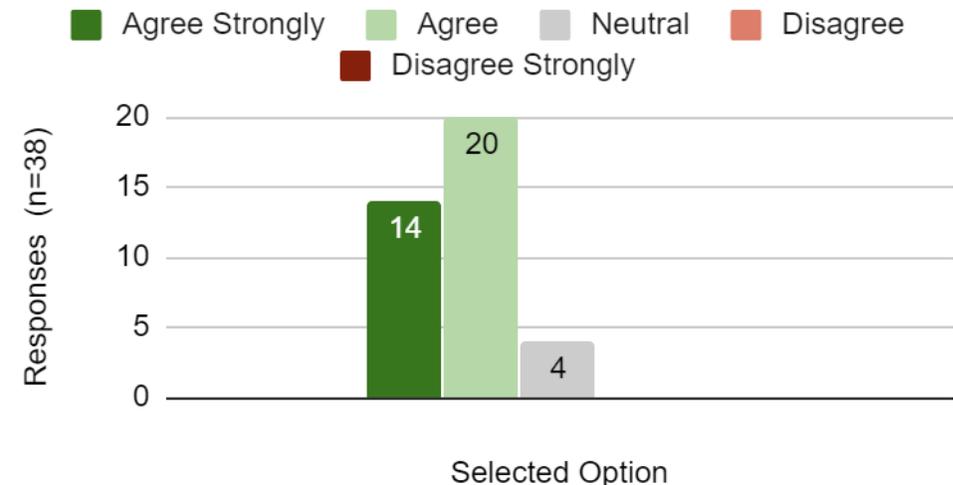
- Improvement from pre- to post-intervention scores (n=42), statistically significant by paired t-test ($p < 0.0001$)
- Participants were asked, “*On a scale from 1 to 10, how effective was this learning tool for you?*”

Average: 8.3 out of 10

- Participants were asked how much they agreed: “*After completing this module, I feel more confident in my ability to identify healthier beverages*”

Pre-Intervention	Post-Intervention
3.00	4.33

Learning Self-Assessment



Limitations of this project include its potential selection bias: patients with more familiarity with technology or interest in the subject may have been more willing to participate. A 2nd limitation is the unavoidable variation of the rooming process, introducing varying time or pressure constraints to participants.

Future Recommendations

- Development of additional modules focused on high priority health topics
 - Participant requests included:
 - “Distinguishing health of unsaturated vs saturated fats” & “Diet and exercise”
 - “Heart disease”
 - “Gout & Arthritis”
 - “Sexual health”
- Technical updates to current module to increase reflective and interactive engagement (e.g. text boxes for patients to articulate personal goals, options for referral to dietician)
- Development of longitudinal cohort studies can evaluate long term knowledge retention and behavioral change
- Future research also needed to understand whether the educational potential of web-based interactive modules in this study can be duplicated in other environments (e.g. other rural sites, urban settings, tertiary care centers) and across other health topics

References

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References (for images)

1. From Wikimedia Commons (<https://commons.wikimedia.org>): Coca Cola (by Ralk Roletschek), Refined Cane Sugar (by Fritz), Impact of a Drop of Water (Roger McLassus)
2. From Flickr (<https://www.flickr.com/>): Gatorade (by Mike Mozart and JeepersMedia)

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