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MEGAN KAWASAKI, MS3

COMMUNITY HEALTH CENTERS OF BURLINGTON

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MENTOR: HEATHER STEIN, MD

PROBLEM IDENTIFICATION: ADDED SUGARS

- Consumption of excess added sugars is implicated as a contributing factor to a range of metabolic disorders including obesity and diabetes mellitus, as well as to increased cardiovascular disease risk and mortality.[1,2]
  - Intake of added sugars has been found to be one of the most predictive dietary factors of all-cause mortality.[3]
- Highly processed foods, such as soft drinks and breakfast cereals, are often a source of “empty calories” and provide minimal essential nutrients. They can therefore displace more nutrient-dense foods from diets and cause patients to be both overfed and undernourished.[4]
  - Consumption of processed foods, which are energy-dense and nutrient-poor, is positively associated with total energy intake, which can be an obstacle to maintaining a healthy body weight.[5]
- Limiting added sugars by reducing processed food intake – among modifying other lifestyle habits – can be a means for improving overall health.

COMMUNITY NEED: NEW AMERICANS IN CHITTENDEN COUNTY

- In Vermont, Chittenden County is one of only two counties in which refugees are resettled.[6]
  - Between 1989 and 2014, at least 6,300 people have been placed in Chittenden County through the Vermont Refugee Resettlement Program.[7]
- Family medicine physicians, among other healthcare providers at Community Health Centers of Burlington (CHCB), care for a diverse population, including many new Americans who often have limited English proficiency (LEP).
  - 17% of all patient visits rely on interpreter support, and an average of 22 different languages are requested monthly through CHCB interpreter services.[8]
- For reasons poorly understood, immigrants and refugees in the United States exhibit lower dietary quality than the general population. Acculturation – the adoption of cultural norms and practices of the host society – has been associated with increasing risk of obesity and cardiovascular disease.[9]
  - Studies have shown that, despite the abundance of food in the United States and an understanding of what foods are considered healthy, post-resettlement refugees reported difficulty in finding familiar or healthy foods.[10]

PUBLIC HEALTH IMPLICATIONS

- There is an identifiable propensity for post-resettlement refugees to increase their intake of sweets, sweetened beverages, fruit juices, and fast food.[10] In addition, there is a correlation between the length of time refugees have lived in the United States and the likelihood that they will consume added sugars ($P<0.05$).[11]
- The aforementioned dietary habits, which tend toward consumption of processed foods, has been associated with refugee overweight, obesity, and excessive energy intake.[12]
- There are no statistics specific to refugee health in Chittenden County. Nevertheless, it is worthwhile to examine the general health of the county as it relates to diet and morbidities associated with added sugars.
  - Between 2013 and 2015, 77% of adults in Chittenden County reported that they did not eat five servings of fruits and vegetables daily.[13]
  - Between 2015 and 2016, 20% of adults in Chittenden County were obese, with 36% of adults considered overweight.[13]
  - In 2014, 20% of deaths were due to cardiovascular disease, and 3% were due to diabetes.[13]

PUBLIC HEALTH COSTS

- In the United States, significant financial resources have been dedicated to treating conditions associated with added sugar intake, such as obesity, diabetes, and cardiovascular disease.
- In 2014, medical costs attributable to an obese individual totaled $1,901, which accounted for $149.4 billion spent nationally.[14]
- In 2017, the total estimated cost of diagnosed diabetes was $327 billion, which includes $237 billion put toward direct medical costs and $90 billion lost due to reduced productivity.[15]
- In 2017, the CDC found that Americans suffer 1.5 million heart attacks and strokes each year, which contributes to more than $320 billion in annual healthcare costs and lost productivity. By 2030, this cost is projected to rise to $818 billion.[16]

COMMUNITY PERSPECTIVES

- On disease processes that seem closely correlated with added sugar intake: "Diabetes and high triglycerides and overweight. I think people who drink a lot of sodas also eat a lot of processed foods, so there's that hand-in-hand relationship. Pretty much **every health condition can be influenced by excess added sugar**, or sugary drinks in particular. I worry when I see kids drinking soda constantly. I don't think any food should be off-limits, but that's when I worry about how their pattern of eating tends to be geared more towards sugar and processed foods for the rest of their life. That's a challenge."

  – Emily Heaslip, RD
  CHCB Community Health Team

- On LEP-friendly resources related to added sugars: "There really is **not enough information available** for patients with limited English proficiency. For years, we had a display with six soda drinks, and we showed how many sugar cubes were in each one as a visual. It was impressive how many LEP patients would look at it, and they could really see what is a good drink and what isn't. The problem is that it's easy to show a poster in the waiting room or something like that, but patients won't remember it. So **anything we can do for our patients – especially if it's easily translated – can be helpful.**"

  – Diana Greenough, EDFA
  CHCB Dental Director

INTERVENTION & METHODOLOGY

- The goal of this project is to promote health literacy about added sugars in a handout that is accessible to all patients, particularly new Americans with limited English proficiency (LEP).
- The handout has two main goals:
    1. To provide similarly priced and healthier alternatives to common grocery store items that contain significant amounts of added sugar. This is achieved with one side of the handout, which contains infographics that are meant to be informative for those with little to no English proficiency.
    2. To educate patients about the health risks associated with added sugars and offer further suggestions for how to limit their consumption (e.g., how to scan ingredient lists for added sugar). This makes up the content of the other side of the handout, which has more detail and will require a greater degree of English proficiency.
- The handout can be distributed by providers or by the Community Health Team to any of their patients.
- The intention is for this to be a useful source of information for any and all of CHCB's patients (regardless of LEP) and to help them make incremental lifestyle changes.

RESPONSES

- The handout was reviewed by some of CHCB's family medicine providers, dentists, and community health team members who thought a nutrition handout accessible to LEP patients was a worthwhile pursuit.
- Providers assessed the handout to be visually appealing, with infographics that conveyed crucial information in a format that was concise and easily understood. Further, they agreed that the visuals fulfilled their intended purpose of being useful for LEP patients.
- They also deemed it to be an excellent "take-home" resource for patients to remind them of how – and why – to be mindful of added sugars.
- The inclusion of how added sugar consumption can negatively impact oral hygiene was particularly well-received, as this is a salient problem that dental providers encounter regularly at CHCB.
- Copies of the handout will be distributed to patients as necessary in relevant office visits (e.g., dietitian consultation, dental check-ups). The handout will also be posted in waiting rooms within the clinic.

EVALUATION OF EFFECTIVENESS & LIMITATIONS

- The effectiveness of the handout will ultimately be determined by the Community Health Team and providers at CHCB. They will be able to find out patients' perspectives on whether they learned from the handout, whether it improved their awareness of added sugars, and whether it motivated them to make changes.
- A possible means of evaluation is to have providers note which patients were given the handout and have a scheduled follow up visit with each to see if it helped them implement any lifestyle changes. If none were made, the providers can find out why, and the responses can be used to revise the handout.
- The limitations of the handout include:
  - An inability to assess long-term outcomes on patients' health as a result of this intervention (e.g., effect on a patient's risk for developing obesity, CVD, diabetes, etc.).
  - The handout might go unnoticed amidst the multitude of other educational materials that are either provided at office visits or posted in public areas of the clinic. As such, patients may not have the opportunity to fully absorb all of the information.
  - The example grocery store item "swaps" are not reflective of every person's diet and so may not be useful for all readers. They were also limited to brand name goods because they were easy to recognize and did not address how to eat more fresh, whole foods.

RECOMMENDATIONS FOR FUTURE PROJECTS

- Create LEP-accessible literature that can promote other positive lifestyle changes, such as ways to eat less salt or simple exercise routines.
- Revise the handout to be more specific to diets of a particular refugee population that CHCB serves such as people from Bhutan or Somalia. Translate the handout accordingly.
- Work with the CHT to see how education on added sugars (or other unhealthy foods) affects patients' lifestyles. This could be a study involving longitudinal follow-up with a few patients or families over the course of the clerkship.
- Develop simple recipes for healthy snacks or meals that can be regularly incorporated into patients' diets. The needs of food insecure households should especially be considered, particularly in terms of what kinds of products they can afford to buy.
- Help establish relationships between CHCB patients and a local Community Supported Agriculture (CSA) or the farmers' market in order to introduce them to long-term resources that provide reliable fresh produce.

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APPENDIX: ADDED SUGARS HANDOUT