

# Family physicians' knowledge, attitudes, and behaviors regarding the weight effects of added sugar

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## Abstract

**Background and objectives:** Added sugar consumption is a major risk factor for negative health outcomes and family physicians play an important role in educating patients regarding nutrition behaviors, such as consumption of added dietary sugar. The aim of this study was to describe the knowledge, attitudes, and behaviors of family physicians regarding added dietary sugar.

**Methods:** An online questionnaire was administered to family physician members of the Council of Academic Family Medicine organizations, which support teaching physicians that train family physicians throughout the United States. Survey items underwent rigorous pilot and cognitive testing prior to administration. Descriptive statistics and Pearson's chi-square test were performed to evaluate physician's dietary counseling for patients with overweight and obesity.

**Results:** Among practicing family physician members ( $n = 1196$ ), 72% reported providing dietary counseling to the majority ( $\geq 50\%$ ) of their patients with overweight and obesity. Most (90%) believed that their counseling was ineffective for the majority of patients. Frequency of counseling was significantly associated with beliefs about counseling effectiveness ( $p$ -value  $< 0.001$ ). Nearly all physicians (97%) advised against consuming sugary beverages, while advising patients to limit foods with added sugar was less common (82%).

**Discussion:** Dietary counseling is often, but not always, provided to patients with overweight and obesity by family physicians in our sample, though most physicians believed their counseling is ineffective. National attention to added sugar as a risk for poor health should serve as a catalyst for renewed efforts from primary care educators and clinicians to engage in innovative practices to empower at-risk patients to improve their nutrition.

## Keywords

Family medicine, medical education, nutrition, obesity, primary care, sugar

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## Introduction

Excess added sugars are implicated as a significant contributor to obesity and its associated morbidities.<sup>1–6</sup> Added sugars are defined as sugars and syrups put in food during preparation, processing, or added at the table. Specifically, those individuals who consume a large proportion (17%–21%) of their daily calories from added sugar have been shown to have a 38% higher risk of dying from cardiovascular disease than those that consume a smaller proportion (8%) of their daily calories from added sugar.<sup>5</sup> Another study demonstrated an 11-fold increase in diabetes prevalence if individuals consume an additional 150 calories per day (about one soda) from *sugar* as opposed to calories from other nutrients.<sup>6</sup> Sugar consumption in the United States has more than doubled in the past 30 years, and currently Americans consume

about 140 pounds of sugar per year.<sup>7</sup> Due to growing evidence linking added sugar intake to obesity and other chronic diseases, organizations such as the American Heart Association

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(AHA) and World Health Organization (WHO) have released guidelines recommending limiting sugar consumption. The AHA recommends limiting the amount of added sugars to no more than half of one's daily discretionary calories allowance.<sup>8</sup> For most American women, that is no more than 100 calories per day, or about six teaspoons of sugar. For men, it is 150 calories per day, or about nine teaspoons. The WHO recommends reducing added sugar to less than 10% of total energy intake.<sup>1</sup> Likewise, the US Food and Drug Administration (FDA)<sup>9</sup> will mandate the inclusion of the quantity of "added sugar" on all nutrition labels by January 1, 2020 in an effort to allow consumers to make more informed decisions about their sugar intake.

Family physicians are on the front lines in the prevention, diagnosis, and treatment of nutrition-related health concerns. The United States Preventive Services Task Force (USPSTF) recently found adequate evidence for offering intensive lifestyle counseling including nutrition counseling for patients with overweight/obesity with cardiovascular disease risk factors and updated its grade recommendation to level B ("Offer or provide this service").<sup>10</sup> Despite these recommendations, most medical school curriculums and residency programs lack adequate nutrition training.<sup>11,12</sup> A recent review found that 71% of medical school programs do not provide the 25 hours of nutritional instruction recommended by the National Academy of Sciences. The same report found that more medical schools had decreased, rather than increased, their total nutrition education in the preceding 5 years.<sup>13</sup> Likewise, one study found that the majority of primary care residents report feeling unprepared to provide nutritional counseling to their patients.<sup>14</sup> In light of the dangers of added sugar and the limited nutrition training physicians receive in their education, the aim of this study is to describe the knowledge, attitudes, and behaviors of family medicine physicians regarding added dietary sugar.

## Methods

### Collection

Between 2 February and 20 March 2016, a rigorously piloted and cognitive tested seven-item questionnaire was administered to family physicians via an online omnibus survey containing several topical areas distributed by the Council of Academic Family Medicine Educational Research Alliance (CERA).<sup>15</sup>

### Sample

The survey released by CERA sampled all physician members of four major family medicine organizations: the Association of Departments of Family Medicine, the Association of Family Medicine Residency Directors, the North American Primary Care Research Group, and the Society of Teachers of Family Medicine. In order to provide

findings relevant to actual care provided by physicians, those who did not fill out the questionnaire and those who do not provide direct patient care were excluded from our analysis.

### Survey items

Survey items specifically investigated physician familiarity of research findings, knowledge of published guidelines, and counseling topics pertaining to added sugars. Other items included the frequency of nutritional counseling, the perceived efficacy of performed counseling, and physicians' general knowledge about macronutrients' contribution to obesity. All survey items were piloted with family physicians via cognitive interviewing techniques and were edited accordingly. Edits included the addition of sub-headers for clarity, bolding important words, and shortening questions stems. Please see Supplementary Appendix 1 for full survey.

### Analysis

Descriptive statistics were performed to characterize each survey response. Chi-square tests were used to assess the association between practice and beliefs on effectiveness of dietary counseling for patients with overweight and obesity.

This study was granted an exemption from formal review by the University of Michigan Institutional Review Board.

## Results

The survey was sent via email to 3750 US physician members of four major family medicine organizations. Among these, 80 emails were undeliverable and 68 individuals opted out of the survey resulting in an overall sample size of 3602, of which 1248 responses were collected (response rate=35%). After excluding the respondents who reported that they did not provide any direct patient care (n=52), our final sample included 1,196 practicing family physicians (Table 1).

While the majority of physicians reported to be somewhat (56%) or very familiar (15%) with research relating added sugars to chronic disease, less than one third (30%) of family physicians were familiar with accepted guidelines pertaining to added sugar consumption.

Nearly all physicians (97%) advised patients against consuming added sugar in beverages, while four in five (82%) advised patients to avoid added sugars in food.

The majority of physicians agreed (32%) or strongly agreed (58%) that added sugar intake makes a contribution to excess body weight.

About 72% of physicians provided dietary counseling to a majority ( $\geq 50\%$ ) of their patients with overweight and obesity, while 15% provided counseling to 100% of these patients (Figure 1).

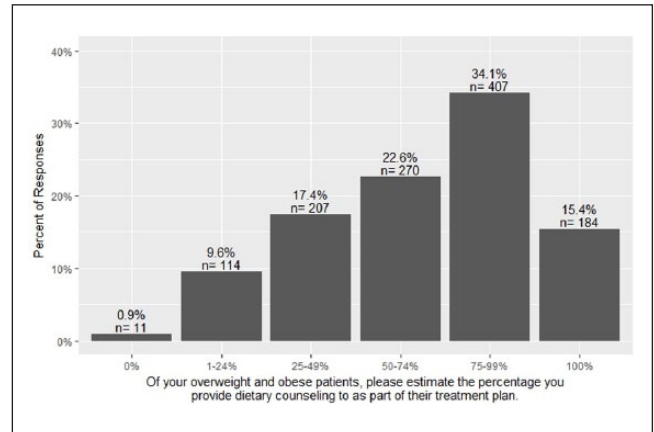
Most physicians in our sample (90%) estimated that their dietary counseling was ineffective in promoting behavior

**Table 1.** Demographic and professional characteristics of the included sample (n = 1,196).

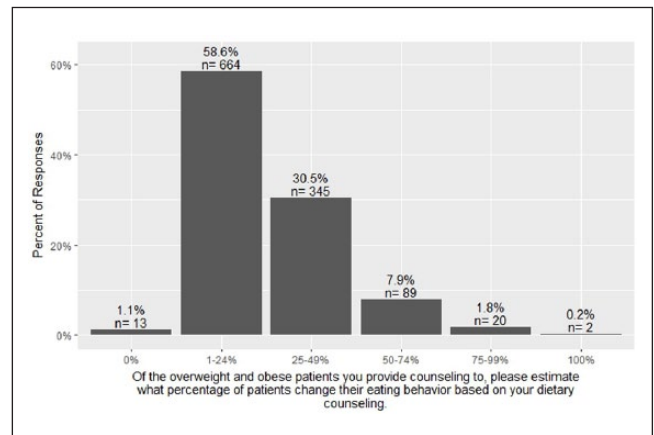
Variable	
Gender, n (%)	
Male	594 (50.0)
Female	595 (50.0)
Missing	7
Age, n (%)	
<30	4 (0.4)
30–39	299 (25.1)
40–49	374 (31.4)
50–59	299 (25.1)
60+	214 (18.0)
Missing	6
Race/ethnicity, n (%)	
Hispanic	53 (4.5)
Non-Hispanic white	969 (81.5)
Non-Hispanic black	53 (4.5)
Asian	77 (6.5)
Other	36 (3.0)
Missing	8
Terminal degree, n (%)	
MD	1,085 (90.9)
DO	105 (8.8)
Other	4 (0.3)
Missing	2
Rank, n (%)	
Assistant	460 (39.1)
Associate	360 (30.6)
Full professor	222 (18.9)
Visiting	2 (0.2)
N/A	132 (11.2)
Missing	20
Primary role, n (%)	
Administration	300 (25.5)
Clinical teaching	646 (54.8)
Research	49 (4.2)
Faculty development	15 (1.3)
Clinical care	128 (10.9)
Non-academic physician	10 (0.9)
Other	31 (2.6)
Missing	17
Percent time spent on, mean (SD)	
Direct patient care (n = 1196)	33.9 (19.3)
Research (n = 976)	8.5 (13.0)
Administration (n = 1147)	30.2 (20.0)
Teaching (n = 1172)	29.2 (16.9)
Other (n = 292)	7.0 (9.9)
Years since residency, mean (SD)	17.7 (10.6)

SD: standard deviation.

change in the majority of their patients. Only 2% of physicians thought that their counseling changed the behavior of at least 75% of their patients (Figure 2).



**Figure 1.** Family physician–reported percentage of patients with overweight and obesity who were provided dietary counseling.



**Figure 2.** Family physician–reported percent of patients with overweight and obesity that change their eating behavior based on their counseling.

Providers who were less likely to counsel their patients also estimated that the patients who do get counseled are less likely to change their eating behaviors ( $p < 0.001$ ). There were no associations between provider characteristics and responses to any of the survey questions.

## Discussion

Our results suggest that physicians believe a diet with excess added sugar plays a negative role in patient health, specifically in contributing to excess body weight. This attitude may be reflected in their practice, as the majority of responding physicians advise against added sugar consumption in both food and beverages.

While these findings are encouraging, they appear to be accompanied by pessimism about the efficacy of dietary counseling in general. Our findings show that the majority of

physicians estimate that less than half of the patients change their eating behavior as a result of dietary counseling. This low perceived success rate may represent a sense of hopelessness toward dietary counseling, affecting how physicians provide care.<sup>12,16</sup> In fact, there was a significant relationship between perceived success and frequency of dietary counseling, indicating that providers who counsel their patients less also estimate that their patients are less likely to change their eating behaviors. This may represent a perception that patients with overweight and obesity are unable or unwilling to change their eating behaviors.<sup>12,16</sup> Such negative stereotypes about patients with overweight and obesity are known to impact quality of care provided.<sup>17</sup>

Another reason for these low rates of counseling may be that physicians do not feel comfortable or have the knowledge to provide nutritional counseling.<sup>14,18,19</sup> Surprisingly, the majority of responding physicians reported awareness of research about the negative effects of added sugar on health, but the majority also responded that they were not familiar with any specific guidelines for added sugar. Without knowing the intake recommendations, it is possible that the dietary counseling provided by many physicians may lack specific recommendations for dietary changes. Furthermore, most physicians do not receive training in evidence-based counseling strategies, such as motivational interviewing.<sup>20</sup> Low self-efficacy related to dietary counseling experienced by some family physicians may begin as early as medical school when physicians do not receive adequate training about nutrition or counseling strategies.<sup>11</sup> This is perpetuated throughout training and into practice when physicians do provide dietary counseling and see no change in their patients.<sup>12</sup> Physicians may become even further convinced that the practice of counseling is ineffective and, as a result, their motivation to maintain and expand their capacity to provide dietary counseling is diminished.

One potential solution is to fully engage the involvement of other healthcare professionals. One systematic review from 2009 shows that low/moderate-intensity physician counseling by itself did not achieve meaningful weight loss, but was successful when combined with other intensive counseling (i.e. provided through a dietitian).<sup>21</sup> This is supported by the USPSTF recommendation for “Healthful Diet and Physical Activity for CVD Disease Prevention” that recommended “intensive” behavioral counseling with multiple contacts over an extended time period, including nutritionists.<sup>10</sup> An alternative could be to increase the capacity for physicians to provide dietary counseling on their own. To this end, the quantity and method of nutrition and counseling strategies taught in medical school and residency programs could be improved. Although mobile technology and online resources are used nearly ubiquitously by patients for health, primary care providers may not be leveraging these tools during patient care for nutrition.<sup>22</sup> Since dietary intake is a driver of obesity and its related comorbidities, providing adequate training and access to up-to-date resources to physicians in nutrition should be a pivotal aspect of medical training.

Our findings should be considered in the setting of several limitations. First, the overall low response rate may limit the generalizability of our findings, as we were unable to ascertain how our respondents differed from non-respondents. However, our study represents a large sample of practicing and teaching family physicians and consists of members of family medicine organizations that serve teaching family physicians. While the composition of our sample may not be representative of all practicing family physicians (e.g. older age, greater number of years since residency), the findings represent the knowledge, attitudes, and behaviors of those that influence the training of future family physicians. In addition, power calculations were not feasible as our survey was administered as part of an omnibus survey with other survey items, and all potential respondents were sampled. Also, as in most survey research, our findings may be subject to desirability bias as most physicians likely understand that dietary counseling is recommended. The respondents’ body mass indexes (BMIs) and dietary behaviors were not collected and may also influence their responses. Furthermore, it may be difficult for physicians to accurately estimate the effectiveness of the counseling they provide. Finally, the definition of nutritional counseling was purposefully left undefined in efforts to capture all types of counseling. Physicians may differ in what they consider nutritional counseling.

In conclusion, our large-scale survey of practicing family physicians found that family physicians were generally unaware of the guidelines pertaining to added sugar and were less likely to counsel their at-risk patients about added sugars in food compared to in beverages. National attention to added sugar as a risk for poor health should serve as a catalyst for renewed efforts from primary care educators and clinicians to engage in innovative practices to empower at-risk patients to improve their nutrition.

### Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Ethical approval

This survey was administered as part of an omnibus survey by the CERA (<http://www.stfm.org/Research/CERA>), an initiative of the Society of Teachers of Family Medicine. The omnibus survey protocol was approved by the American Academy of Family Physicians Institutional Review Board. However, the analysis presented in this manuscript was on de-identified survey data and thus is deemed non-regulated by the IRB of the University of Michigan and the Office for Human Research Protections (OHRP; <https://www.hhs.gov/ohrp/regulations-and-policy/guidance/research-involving-coded-private-information/index.html>).

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## Informed consent

In the original data collection performed by CERA, a waiver of written consent was granted by the Institutional Review Board of the American Academy of Family Physicians. As approved by the IRB and as is the standard in anonymous online surveys, simple language was used to explain consent and the process of participants proceeding to the survey and completing it constitutes consent because further collection of names or signatures would increase the risk to participants.

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