

New Insights and Future Directions: The Importance of Considering Poverty in Studies of Obesity and Diabetes

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Obesity is a complex, chronic disease in which abnormal or excess adiposity impairs health and is associated with increased medical comorbidities, including type 2 diabetes.¹⁻³ A worrisome 42.4% of the adult US population lives with obesity.⁴ This issue of *Annals of Family Medicine* features 4 timely articles by researchers focused on addressing the challenges posed by obesity and diabetes on the health and well-being of people living with these chronic diseases.⁵⁻⁸ Two of the papers expand upon the body of knowledge about medical nutrition therapy to reduce weight and improve metabolic parameters.^{5,6} Two provide population information: one as a description of diabetes control in a primary care population, and one as a description of the baseline characteristics of an ongoing weight reduction study in primary care.^{7,8} Taken together, these contributions provide new insights and highlight avenues for further inquiry.

The recent 2020 Canadian Adult Obesity Guidelines³ provided a comprehensive overview on medical nutrition therapy as a mainstay of care for people living with obesity.⁹ The guidelines highlight the state of evidence among different dietary approaches and stress the importance for people to undertake a dietary approach they can sustain in the long term. Dr McCarthy and colleagues' randomized controlled study on this is timely.⁵ They compare the effectiveness of 2 federally recommended strategies to reduce excess body fat from the perspective of whether focusing on increasing satiety vs calorie counting might help reduce peoples' cognitive load, increasing adherence. Conducted with people with low income and of predominantly Latine origin, they compared the MyPlate.gov approach to increasing adherence to the Dietary Approach to Stop Hypertension (DASH)

vs Calorie Counting consistent with the National Diabetes Prevention Program. Both protocols were supported with 11 health education sessions over 6 months, with a 6-month no-intervention period to assess sustainability. The MyPlate.gov DASH diet emphasized satiety with a minimum of 8 servings of fiber-rich fruits and vegetables per day as one-half of daily food intake, one-quarter of food intake from whole grains, and one-quarter from high quality protein. They did screen for food insecurity and included this as a covariate. Neither intervention yielded a significant reduction in body weight. Interestingly, acculturation was inversely associated with baseline dietary quality, suggesting interventions on newcomers to help preserve their dietary patterns may be helpful. Dr Laura Saslow and colleagues at the University of Michigan add to the knowledge base of the impact of dietary patterns with the first randomized comparison of whether a very-low carbohydrate diet vs a DASH diet results in more metabolic improvement over 4 months in 94 adults with hypertension, pre-diabetes, diabetes, overweight, or obesity.⁶ Over this time period both approaches showed significantly improved reductions of blood pressure, glycemic control, and weight, with significantly more reductions in the very-low carbohydrate diet group. Of note, there were only 7 participants living on a household income of <\$35,000.

Enhancing our knowledge of what is happening with clinical interventions in real-world practice, Dr Leigh Perreault and colleagues from the University of Colorado present the baseline characteristics of the ambitious and promising PATHWEIGH study of a primary care approach to weight management embedded into processes of care of 57 clinics in their health region.⁷ A striking element was the huge care gaps revealed: of the 160,000 adult patients with a BMI ≥ 25 kg/m² in the preceding 12 months, only 12% (n = 20,383) had a weight-prioritized visit with an average of 1.39 (1-20) visits per patient. Fewer than 6% had a weight-related referral and only 334 out of 20,383 had prescriptions for anti-obesity medications. The population who had any weight-prioritized visit was privileged, with 64% commercially insured contrasted with 8.5% insured by Medicaid and 1.2% self pay.

Dr Randy Foss and colleagues from the Mayo Clinic Health System present their analyses of disparities in diabetes care considering differences between rural and urban patients

Conflicts of interest: D.C.-S. was on the executive committee for the 2020 Canadian Adult Obesity Guideline and a member of the Alberta Diabetes Institute.

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in their system.⁸ They conducted a retrospective cohort study of the 45,279 patients with diabetes and considered a 5-component measure of diabetes care including blood pressure <140/90, statin use, aspirin use, hemoglobin A_{1c} <8% and no tobacco use. This well-done study highlighted the finding of rural patients having worse diabetes outcome attainment (39.3%) compared with the urban patients (43.2%); yielding an adjusted odds ratio (95% CI) of 0.93 (0.88-0.97). Looking at the 7.7% of patients on Medicaid, 8% were in the rural population and 7.3% were in the urban population. The adjusted odds ratio (95% CI) was a stunning 0.58 (0.53-0.63) comparing the Medicaid-insured population to the commercially insured group; a magnitude of difference not observed with any other demographic or patient care delivery variable: sex, White vs non-White, rurality, age, medical comorbidity (adjusted clinical group risk score), diabetes education, nutrition consultation, endocrinology visits, advanced practice provider vs primary care physician, or more outpatient visits.

A common element across these studies is that people who are in vulnerable circumstances with poverty struggle with obesity management: whether they are able to access a weight-prioritized visit, attain good diabetes disease control, or afford food of the desired nutritional composition to support health and weight control. The United States Department of Agriculture defines poverty as having an income below a federally determined poverty threshold; a point below which a family has cash income insufficient to meet the basic needs of food, shelter, and clothing. According to the 2019 American Community Survey, poverty is more prevalent in rural areas at 15.4% compared with 11.9% in metropolitan areas.¹⁰ This proportion increases to up to one-third of rural Black/African American, and American Indian/Alaskan Native, and one-fifth of rural Hispanic people living in poverty.¹⁰ During the COVID-19 pandemic US adult obesity rates were higher, and very-low and low food sufficiency disproportionately affected certain groups of the US population more than others.^{11,12} As we conduct studies on strategies to advance care for people living with obesity and diabetes, seeking to understand the contextual factors affecting diverse people in vulnerable circumstances' access to food and care will inform interventions and implementation strategies to address the population-level impacts of these chronic diseases.



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