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# Journal of Diabetes and Its Complications

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## Understanding the importance of Food Insecurity among populations with diabetes



Food insecurity may be a health issue not often considered by the readership of the *Journal of Diabetes and Its Complications*. However, in their study recently published in the *Journal*, Schroeder et al.<sup>1</sup> provided a relevant example for considering the health implications of food insecurity in populations with diabetes. The first standardized definition of food insecurity was developed in 1990 by a group of scientific experts who stated that “food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.”<sup>2</sup> Schroeder and colleagues cited the definition of food insecurity developed by the United States of Department of Agriculture (USDA),<sup>3</sup> the federal organization responsible for monitoring the prevalence of food insecurity within the United States (US), wherein food insecurity means “access to adequate food is limited by a lack of money and other resources.” Similar definitions include food insecurity as “the uncertain or limited availability of food owing to cost.”<sup>4</sup> Given these conceptualizations, two points regarding food insecurity can be made. First, the importance of food insecurity as a health issue is most evident via its impact on nutrition and diet. Specifically, food insecurity indicates not having enough food to eat (quantity), as well as not having enough healthy food to eat (quality). Secondly, food insecurity is inextricably linked to financial or monetary resources. Given this, food insecurity is most often faced by low-income or low socioeconomic status (SES) individuals and families with limited resources to consistently access and purchase enough healthy food.

Importantly, food insecurity is linked to multiple chronic diseases, including diabetes.<sup>5–9</sup> In the Schroeder et al. study, this association was further validated by showing that food insecurity predicted diabetes-related health outcomes over a one year period. Utilizing health insurance data, the researchers prospectively examined the association between food insecurity and multiple diabetes-related complications in a sample of older adults (aged 65 years and older) with diabetes. Their results revealed that over the course of one year those who reported food insecurity were more likely to visit the emergency department or be hospitalized and have a higher A1c compared to those who reported being food secure. However, these associations were attenuated after adjustment for SES, including level of education, marital status, living situation (e.g., retirement facility, independent, etc.), and an income proxy (Medicaid enrollment). This finding is particularly salient given that food insecurity is closely aligned with SES as noted above.

A primary strength of this study is the longitudinal (vs. cross-sectional) assessment of how food insecurity was related to a number of important diabetes outcomes over the course of a year. A very limited number of longitudinal studies have investigated similar associations, but with fewer outcome measures as compared to Schroeder and colleagues. These studies have shown that among patients with diabetes who report food insecurity, A1c levels increased over time<sup>7</sup>

and had worse glycemic control (higher A1c levels) and that did not improve over time.<sup>4</sup>

As noted by the authors, a limitation of this study was the use of a single screening question to assess self-reported food security status. The gold standard assessment of food security status is the eighteen-item U.S. Household Food Security Survey Module developed by the USDA.<sup>3,10</sup> To decrease respondent burden, a modified six-item Short Form of the Food Security Survey Module is often used as well.<sup>10</sup> This shortened version has further been adapted with health literacy considerations and has proven useful in research assessing how food insecurity negatively impacts diabetes management.<sup>11</sup> However, the screener utilized in this study is similar to the two-item food insecurity screening tool for pediatric populations,<sup>12</sup> which has been promoted by the American Academy of Pediatrics.<sup>13</sup> This screener has been used to investigate food insecurity and health outcomes.<sup>14</sup>

Another noted limitation was the measurement of food insecurity at a single time point at the beginning of the one year period. This deficit is most evident in the understanding that food insecurity may be cyclical, whereby the ability to purchase nutritionally adequate and safe food alternates with episodes of food adequacy and food shortage.<sup>15–17</sup> That is, food insecurity may be episodic and not static over time and patients may report being food insecure at one time point and subsequently food secure at another, or vice versa. This point is further relevant given evidence of an end-of-the-month “pay cycle” effect that may occur in low-income households, wherein monetary resources are depleted by the end of the month and subsequent hypoglycemia events occur, including emergency room visits and hospitalizations.<sup>18</sup>

Screening for food insecurity can aid physicians and other health care practitioners in identifying patients who may need to be connected to support services, such as the charitable food system (e.g., food banks, food pantries), as well as federal programs to address food insecurity, such as the Supplemental Nutrition Assistance Program (SNAP; formerly known as Food Stamps). SNAP is the primary federal assistance program targeting food insecurity in the US. Importantly, research has shown that participation in SNAP can improve adherence to diabetes treatment among older adults.<sup>19</sup> As shown by Schroeder and colleagues, food insecurity screenings can also help identify patients with diabetes who may be impeded in their efforts to appropriately manage their disease. Such patients may be at risk for poor nutrition and diet quality, poor medication adherence, emergency room visits, and hospitalizations, as well as accelerated progression of their disease. Despite this evidence, more research is still needed to better understand how food insecurity impacts diabetes over the longer-term, especially with respect to disease progression and premature mortality, and with additional focus on younger populations.

As demonstrated by Schroeder et al., food insecurity and SES are interconnected social determinants that underlie diabetes-related health outcomes. Results from their study are especially relevant for physicians who treat individuals with diabetes in primary care settings. Specifically, the confluence of social determinants, especially those indicative of compromised economic resources, within patients are important health considerations that should be acknowledged in the treatment and management of chronic disease.

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