

white paper

BEYOND MEDICINE: DIABETES CARE

HARNESSING FOOD ACCESS AND HEALTH COACHING

EXECUTIVE SUMMARY

Over 130 million adults in the United States are currently diagnosed with type 2 diabetes or prediabetes (according to the Centers for Disease Control and Prevention (CDC) in 2022).¹ That’s 50% of all U.S. adults.² The extraordinary prevalence of diabetes comes at a great cost to the U.S. population’s quality of life as well as to the healthcare system’s budgets. Individuals with diabetes incur 2.3 times higher medical expenses, amounting to an annual average total of approximately \$16,750.³

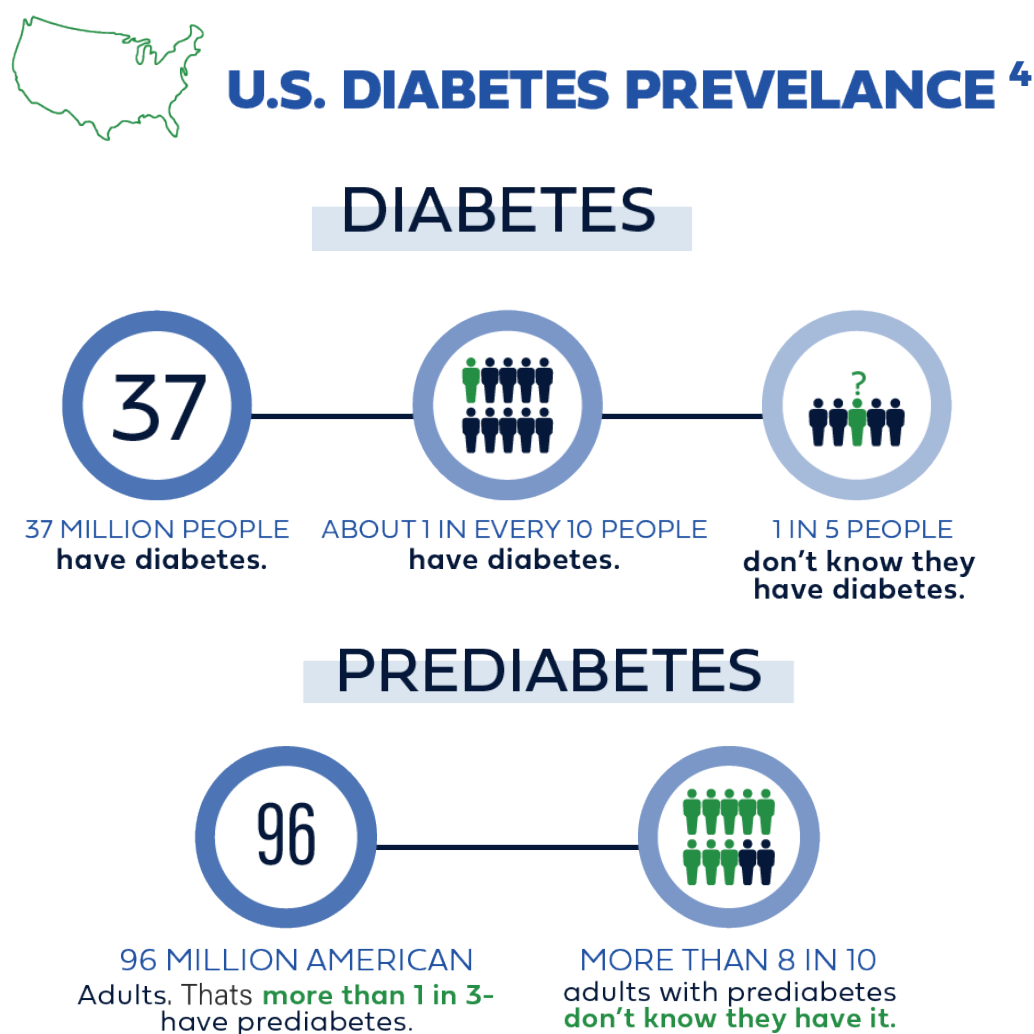


FIGURE 1

1. Centers for Disease Control and Prevention. National Diabetes Statistics Report website. <https://www.cdc.gov/diabetes/data/statistics-report/index.html>. Accessed September 13, 2023.

2. U.S. Census 2020; 258.3 Million adults in United States. www.census.gov.

3. American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2017. Diabetes Care. 2018 May;41(5):917-928. doi: 10.2337/dci18-0007. Epub 2018 Mar 22. PMID: 29567642; PMCID: PMC5911784.

4. Centers for Disease Control and Prevention. National Diabetes Statistics Report website. <https://www.cdc.gov/diabetes/data/statistics-report/index.html>. Accessed September 13, 2023. (FIGURE 1)

Individuals living in poverty, experiencing food insecurity, and/or having lower levels of education, experience higher diabetes prevalence. As of 2020, around 10.5% of U.S. households experienced food insecurity, meaning they had difficulty providing enough food for their family members.⁶ These households disproportionately receive medical care through Medicaid and Medicare which bear the brunt of high costs associated with chronic disease management such as type 2 diabetes.

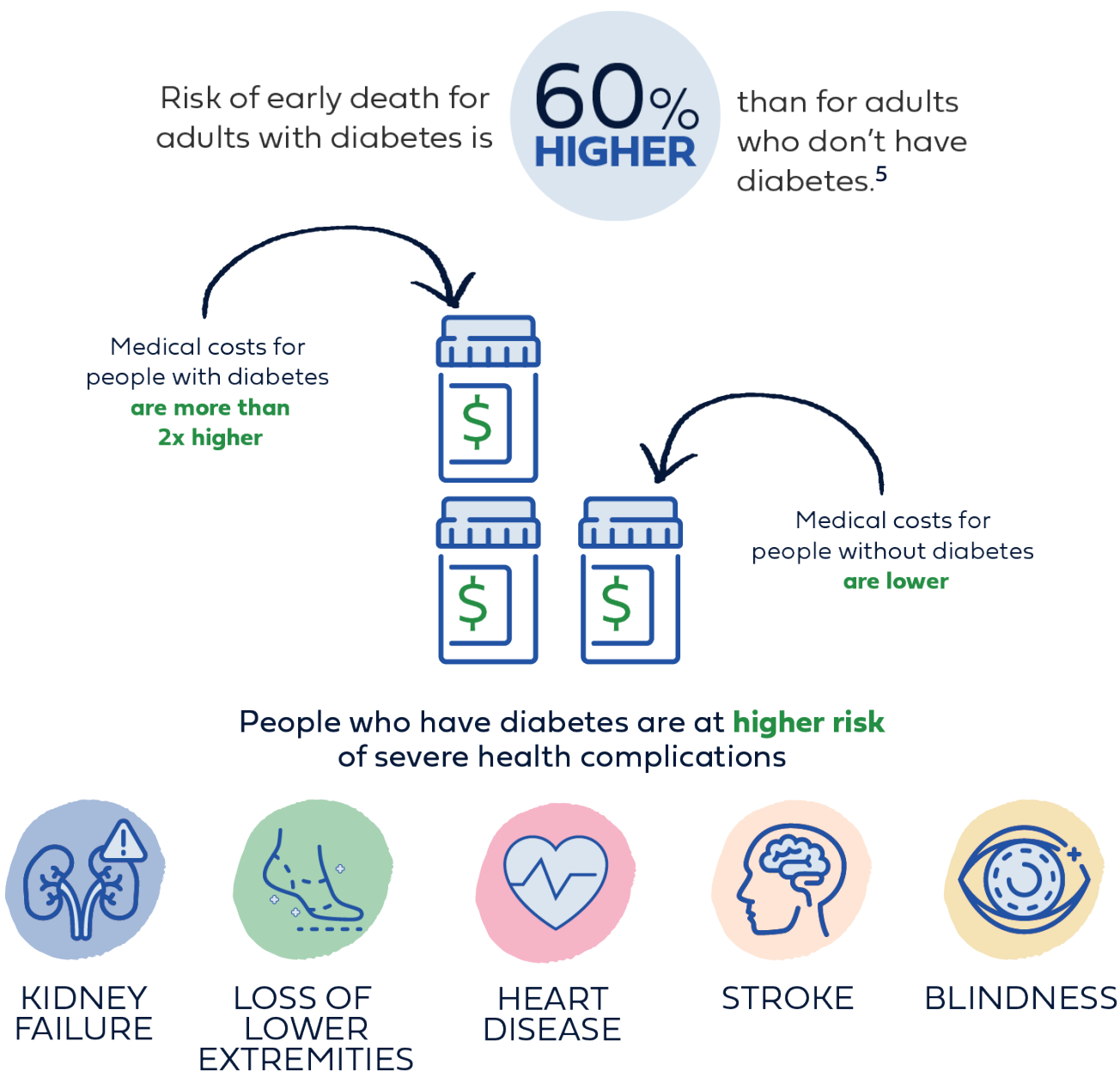
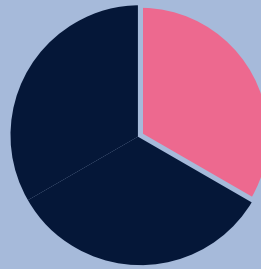


FIGURE 2

5. American Diabetes Association. Economic Costs of Diabetes in the U.S. in 2017. Diabetes Care. 2018 May;41(5):917-928. doi: 10.2337/dci18-0007. Epub 2018 Mar 22. PMID: 29567642; PMCID: PMC5911784 (FIGURE 2)

6. USDA Economic Research Service – Key Statistics & Graphics (<https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.a.spx>)

Millions of Medicaid and Medicare members face access challenges to quality healthcare and nutritious foods and therefore, experience additional hurdles in managing their diabetes and maintaining their overall health.



Nearly one-third of Medicaid enrollees with diabetes were food insecure.

A study published in the American Journal of Public Health highlighted the role of Medicaid managed care plans in providing nutrition services to enrollees. The study found that Medicaid managed care organizations were increasingly offering nutrition counseling and interventions to improve health outcomes among their members.⁷

Assessing the State of Medicaid Managed Care Plans' Nutrition Service Initiatives for Members. American Journal of Public Health

Relatively small investments in providing Medicaid and Medicare members with diabetes access to nutritious foods and personalized health coaching can improve member health and significantly reduce the cost of care.



7. Cohen, A B., & Raja, S. (2019). Assessing the State of Medicaid Managed Care Plans' Nutrition Service Initiatives for Members. American Journal of Public Health, 109(5), 735-741.
8. Casagrande SS, Bullard KM, Siegel KR, Lawrence JM. Food insecurity, diet quality, and suboptimal diabetes management among US adults with diabetes. BMJ Open Diabetes Res Care. 2022 Oct;10(5):e003033. doi: 10.1136/bmjdr-2022-003033. PMID: 36288809; PMCID: PMC961599

THE PROBLEM: LACK OF FOOD ACCESS AND EDUCATION

Food Access and Insecurity.

Food and nutrition insecurity is prevalent among adults with diabetes and is significantly associated with higher levels of HbA1c, a marker of blood sugar control.^{8,9} It suggests that addressing food insecurity among individuals with diabetes could contribute to better diabetes management and improved

HbA1c levels.¹⁰ This research highlights the importance of addressing food insecurity, alongside promoting a healthy diet, as part of a comprehensive approach to managing diabetes effectively. Healthcare providers may need to consider assessing food insecurity when treating patients with diabetes, particularly those at risk of poor diabetes control.

In the U.S. areas with higher food insecurity rates have higher prevalence of diabetes.

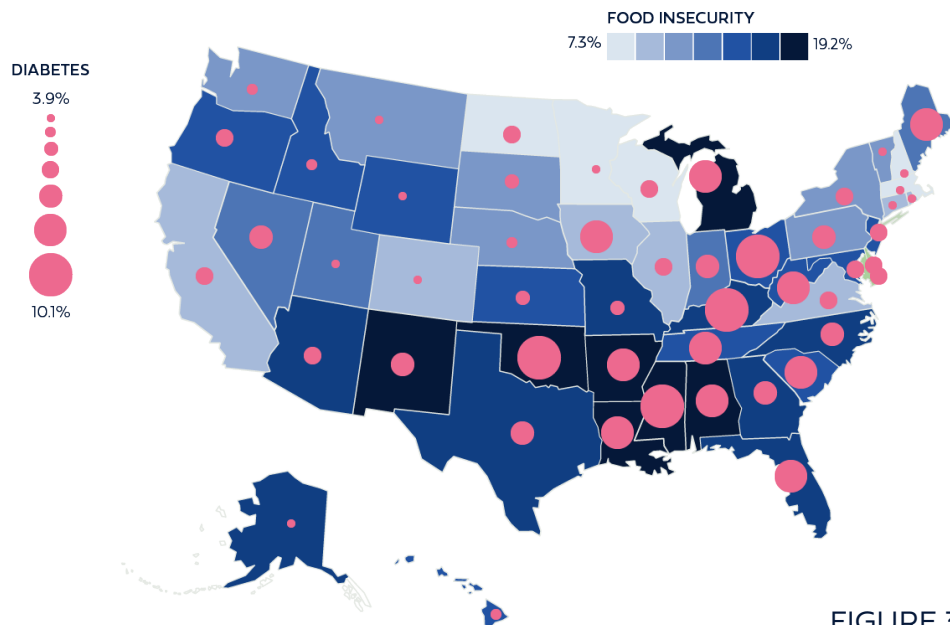


FIGURE 3

McKinsey Center for Societal Benefit Through Healthcare, accessed 2021, mckinsey.com

9. Shrestha SS, Zhang P, Thompson TJ, Gregg EW, Albright A, Imperatore G. Medical Expenditures Associated With Diabetes Among Youth With Medicaid Coverage. *Med Care*. 2017 Jul;55(7):646-653. doi: 10.1097/MLR.0000000000000725. PMID: 28437321; PMCID: PMC7659431.
10. Casagrande SS, Bullard KM, Siegel KR, Lawrence JM. Food insecurity, diet quality, and suboptimal diabetes management among US adults with diabetes. *BMJ Open Diabetes Res Care*. 2022 Oct;10(5):e003033. doi: 10.1136/bmjdr-2022-003033. PMID: 36288809; PMCID: PMC961599
11. Baer T, Isaacs M, Mandel A, Prabhala P. How healthcare payers can expand nutrition support for the food insecure. McKinsey & Company Featured Insights. November 24, 2021.
12. Seligman, H. K., Laraia, B. A., & Kushel, M. B. (2010). Food Insecurity Is Associated with Chronic Disease among Low-Income NHANES Participants. *The Journal of Nutrition*, 140(2), 304-310. (<https://academic.oup.com/jn/article/140/2/304/4600328>) (FIGURE 3)

Food access and nutrition security are two sides of the same coin. For example, a family may have access to a convenience store – they can afford to buy there, they have the time to go, they have the transportation to get there, and they have the energy and physical ability to get there, shop, get home, put away items, and prepare them. However, if the convenience store primarily sells highly processed foods, old

produce, sugary snacks, and ‘fast foods’, then that family still experiences nutrition insecurity.

This is where food deserts and food swamps come into play as their prevalence is crucial to understanding the access and insecurity challenges faced by individuals, especially those with diabetes, in underserved communities.



FOOD DESERTS have limited access to any foods at all, including nutrient-dense items. **FOOD SWAMPS** primarily only consist of low-quality, highly processed, and high-calorie foods found in low-quality grocery, convenience, and fast-food stores. In either geographic situation, members with diabetes are left with limited nutritious options.

Medicaid and Medicare members with type 2 diabetes experience higher rates of food insecurity compared to the general population.¹³ According to the Journal of General Internal Medicine 57% of Medicaid members and 11.6% of Medicare beneficiaries with diabetes experienced food insecurity.¹⁴

The absence of accessible healthy grocery stores not only hinders individuals' ability to maintain balanced diets, but also contributes to higher rates of obesity and diet-related chronic diseases within these communities. This saturation of unhealthy food environments can significantly impact individuals with diabetes, making it challenging for them to manage their condition effectively and avoid complications associated with poor dietary choices.

Survey Respondants who report higher inpatients or ER utilization are more likely to be food insecure¹⁴

% of respondents

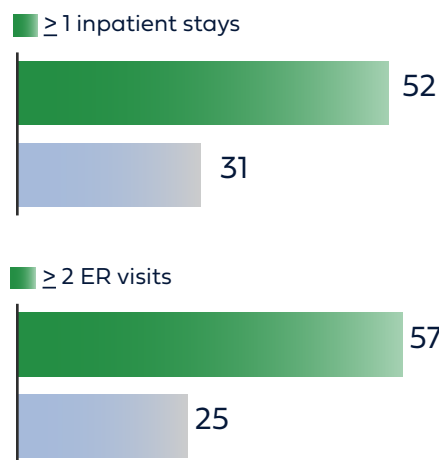


FIGURE 4

McKinsey & Company

The result for Medicaid and Medicare plans is an increased cost of care through higher ER utilizations and IR visits (Figure 4).¹⁵

Racial Disparities

Racial and ethnic minorities often experience higher rates of chronic diseases due to social determinants of health such as healthcare access, nutritious food, transportation, and provider shortages.¹⁶

According to the CDC, the highest rates of diagnosed diabetes among adults were observed in the following:¹⁷

- **14.5%** American Indian and Alaska Native
- **12.1%** non-Hispanic Black individuals
- **11.8%** people of Hispanic origin
- **9.5%** non-Hispanic Asian individuals
- **7.4%** non-Hispanic White individuals

The unhealthy food swamp and desert environments discussed above disproportionately impact areas with higher Black populations.¹⁸

13. Massey M, Zhong Y, LaManna JB, Ng BP. Food Insecurity Among Medicare Beneficiaries With Type 2 Diabetes: Implications for Diabetes Care and Education Specialists. *Sci Diabetes Self Manag Care*. 2023 Aug;49(4):291-302. doi: 10.1177/26350106231173674. Epub 2023 May 24. PMID: 37226484.

14. Hutchins E, Cordina J, Feffer D, Farmer S. Understanding the impact on unmet social needs on consumer health and healthcare. McKinsey & Company Our Insights. February 20, 2020.

15. Ibid

16. CDC Health Disparities and Inequalities Report (<https://www.cdc.gov/mmwr/volumes/66/su/su6601a1.htm>)

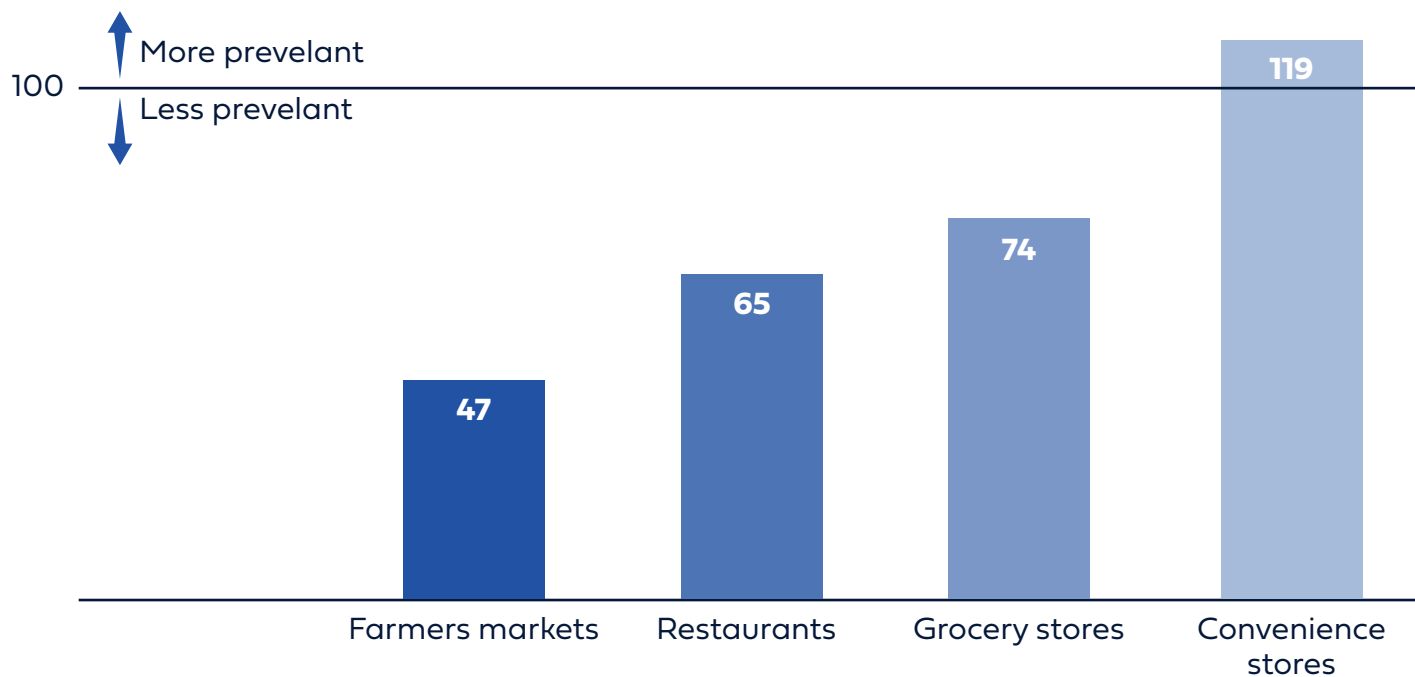
17. Centers for Disease Control and Prevention. National Diabetes Statistics Report website. <https://www.cdc.gov/diabetes/data/statistics-report/index.html>. Accessed September 13, 2023.

Counties in the US with above average black populations tend to have fewer fresh food options, but more convenience stores.

Number of options per 10,000 residents per county, 2016, average ¹⁸

In counties with:	Farmers markets	Restaurants	Grocery stores	Convenience stores
Above average Black representation	0.3	0.3	0.3	0.3
Below average Black representation	0.7	0.7	0.7	0.7

Relative prevalence in counties with above-average Black populations.



Mckinsey & Company

FIGURE 5

Lower socioeconomic status leads to limited access to healthcare, nutritious food, safe housing, and education, resulting in higher chronic illness rates. Adults with family incomes below the federal poverty level exhibited the highest prevalence of diabetes, with rates of 13.7% for men and 14.4% for women.

18. Chui M, Gregg B, Kohli S, and Stewart S. \$300 billion opportunity: Serving the emerging Black American consumer. McKinsey Quarterly August 6, 2021.

Lack of Nutrition Education

Health disparities, influenced by social, economic, and environmental factors, disproportionately affect underserved communities, including racial and ethnic minorities, immigrants, individuals with disabilities, and those in rural areas. They encounter barriers to healthcare, essential services and critical health education.

Lack of nutrition education in elementary schools all the way through medical schools is a problem in the U.S. and is a contributing factor to increased rates of chronic disease.¹⁹ There are no requirements at the federal level to include nutrition education in public schools. Further, nutrition education in medical schools is limited at best as a study in Journal of Biomedical Education reports:

“Most US medical schools (86/121, 71%) fail to provide the recommended minimum 25 hours of nutrition education; 43 (36%) provide less than half that much. Nutrition instruction is still largely confined to preclinical courses, with an average of 14.3 hours occurring in this context. Less than half of all schools report teaching any nutrition in clinical practice”¹⁹

When chronic conditions are diagnosed, rarely are there doctor-patient discussions about food and nutrition care. Diabetes diagnoses are often coupled with orders to reduce sugar intake just as high blood pressure diagnoses go hand-in-hand with warnings to lower cholesterol. Discussions on alternative foods, tips and replacements, cultural food options, and important vitamins and minerals are rare.

“Today in America, nutrition is still rarely discussed during office visits because doctors seldom broach this subject with their patients. Until nutrition becomes a consistent part of patient-doctor conversations, we will continue missing a major opportunity to help people live longer, healthier lives.”

Lloyd B. Minor, MD, Dean of the Stanford University School of Medicine.

19. Kelly M. Adams, W. Scott Butsch, Martin Kohlmeier, “The State of Nutrition Education at US Medical Schools”, Journal of Biomedical Education, vol. 2015, Article ID 357627, 7 pages, 2015. <https://doi.org/10.1155/2015/357627>

20. Lin CL, Huang LC, Chang YT, Chen RY, Yang SH. Effectiveness of Health Coaching in Diabetes Control and Lifestyle Improvement: A Randomized-Controlled Trial. Nutrients. 2021 Oct 29;13(11):3878. doi: 10.3390/nu13113878. PMID: 34836135; PMCID: PMC8621665.

THE SOLUTION: A HOLISTIC AND PERSONALIZED APPROACH

Providing Food Access and Dignity of Choice.

Access to nutritious foods and health coaching is paramount when it comes to enhancing the well-being of individuals grappling with diabetes. It cannot be overstated how pivotal it is to harness the power of food as a form of medicine in the realm of diabetes management. Thoughtfully choosing foods based on evidence can chart a course towards superior blood sugar control, reduced complications, an elevated quality of life, and an overall boost in health for those living with diabetes.

Personalizing nutrition interventions are crucial for people with diabetes, as it emphasizes the importance of individuals' choices as relates to dietary preferences, intolerances and cultural choices. These interventions prioritize individuals' autonomy and their right to decide what they eat and how they access food. Offering a range of healthy choices empowers individuals to take control of their health and dietary preferences, facilitating behavior change and self-determination.

When people actively participate in decision-making regarding their food choices and can select foods that match their tastes and preferences, they are more likely to stick to

their recommended diets. This enhanced adherence can have a profound impact on their health outcomes, particularly for those living with diabetes.

Achieving lasting improvements in food and nutrition necessitates solutions that seamlessly fit into individuals' daily routines. Personalized nutrition experiences are effective in establishing sustainable dietary habits by aligning with members' lifestyles making it more likely that individuals will continue to make healthier food choices to manage diabetes even after the intervention period has ended.



Health Coaching and Nutrition Counseling.

Health coaches play a crucial role in crafting personalized nutrition plans tailored to the individual. Each person's nutritional needs are distinct, shaped by factors such as age, gender, activity level, medical history, health objectives, genetics, metabolic responses, cultural heritage, dietary preferences and food intolerances.

Health coaches can evaluate an individual's precise needs and customize dietary strategies accordingly. This individualized approach substantially enhances the prospects of achieving health objectives and effectively managing diet-related conditions.

Changing dietary habits can be challenging, and many individuals struggle with making sustainable changes. Health coaches serve as supportive partners, helping set realistic goals, providing feedback, and offering strategies to overcome obstacles. By focusing on behavior change, coaches empower individuals to develop healthier eating habits and maintain long-term positive changes.

Benefits

The benefit of a personal and empathetic coaching intervention underscores the profound influence that dietary choices wield over blood sugar levels, complications, and the general well-being of individuals grappling with diabetes.

In many instances, these dietary adjustments and weight management can lead to a reduced reliance on diabetes medications, contributing to enhanced overall health and quality of life as well as prevent or alleviate the severity of complications like neuropathy, retinopathy, and kidney disease. Maintaining

a balanced diet not only fosters stable blood sugar levels but also bolsters energy reserves and facilitates optimal organ functionality.

Nutrient-rich foods supply the body with vital vitamins, minerals, and macronutrients essential for well-rounded health. Working with a coach to learn about these benefits and how to personally achieve them through delicious meals, product choices and habit changes increases the likelihood of sustained change and better health outcomes.

Impact

In a recent study in *Nutrients* evaluated the effectiveness of a 6-month health coaching intervention on HbA1c levels and healthy diet in adults ages 20–75 years with type 2 diabetes. The results showed a significant decrease in HbA1c levels and improvements in dietary habits, including reduced intake of whole grains, meats, fats, and increased vegetable consumption, in the intervention group. Health coaching was found to be beneficial for blood sugar control and dietary improvements in patients with type 2 diabetes. (Figure 6)

A study published in the **International Journal of Behavioral Nutrition and Physical Activity** found that nutrition coaching interventions were associated with significant improvements in dietary behaviors, including increased consumption of fruits and vegetables.

A review published in the *Annual Review of Nutrition* indicates that health coaching can be effective in promoting behavior change and improving health outcomes, particularly in managing chronic diseases.²¹

Regular interactions with a health coach provide a sense of support for member's with diabetes striving to improve their nutrition. Coaches can monitor progress, celebrate successes, and provide encouragement during challenging times. This ongoing support helps

members stay motivated and committed to their health goals. Health coaches go beyond providing mere meal plans; they also educate their clients about the principles of nutrition. By understanding the “why” behind dietary choices and new habits, individuals become empowered to make informed decisions on their own, even after the coaching sessions have ended.

Effect of intervention within 9 months on HbA 1c

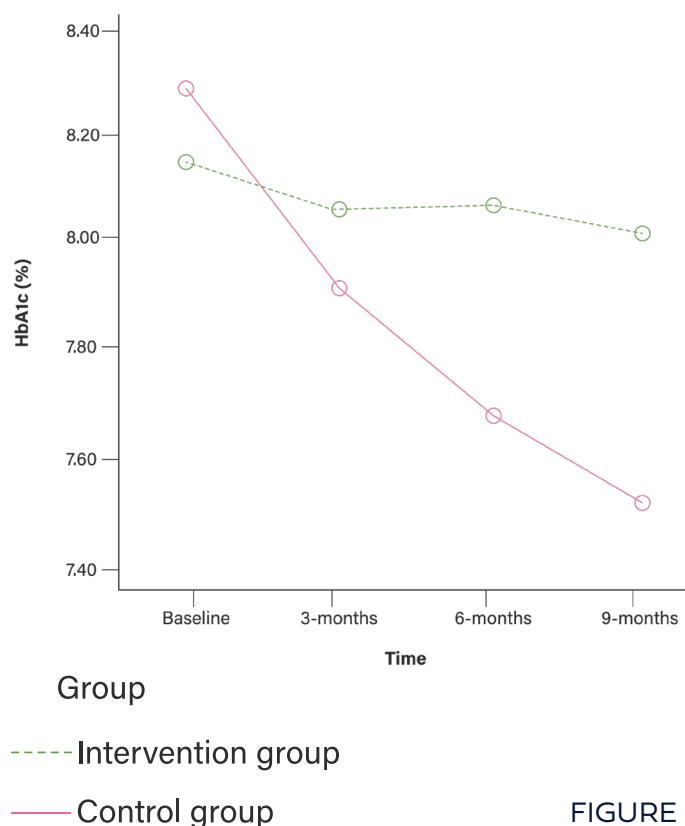


FIGURE 6

International Journal of Behavioral and Physical Activity

21. Hutchesson, M. J., Rollo, M. E., Krukowski, R., Ells, L., Harvey, J., Morgan, P. J., & Collins, C. E. (2015). eHealth interventions for the prevention and treatment of overweight and obesity in adults: A systematic review with meta-analysis. *The International Journal of Behavioral Nutrition and Physical Activity*, 12(1), 1–12. (<https://ijbnpa.biomedcentral.com/articles/10.1186/s12966-015-0313-6>) (Figure 6)

CONCLUSION

Access to nutritious foods and health coaching are indispensable components of diabetes care. They provide personalized guidance, facilitate behavior change, educate individuals about their condition, and help prevent complications. Ultimately, these factors lead to improved diabetes management and an enhanced overall quality of life and well-being.

In a world where access to quality healthcare and nutritious food is not a guarantee for everyone, millions of members with diabetes face challenges in maintaining their health and well-being. The importance of addressing these challenges cannot be overstated, as the correlation between health outcomes and access to proper nutrition is well-documented. A patient-driven, digital health platform offering personalized food selection within cultural norms and preferences, coupled with nutrition coaching, can revolutionize healthcare for the Medicaid and Medicare population.

In addition, innovative solutions like direct-to-home shipped delivery services improve access to healthy and nutritious food in underserved areas, creating more resilient and thriving communities. Emphasizing equity and inclusivity, these solutions bridge the gap in infrastructure and disparities that exist in communities.

The combination of personalized nutrition interventions, health coaching, and innovative access to nutritious food, creates a transformative and holistic approach to healthcare for members with diabetes. By embracing the principles of dignity, choice, cultural sensitivity, and education, we can pave the way for healthier individuals and communities, impacting health disparities and promoting overall well-being.





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