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How to improve nutrition knowledge in patients with type 2 diabetes in the primary care setting

Living with type 2 diabetes (T2DM) involves making decisions about many aspects of daily life, and many of these are related to food. Decisions that may seem simple—what to have for breakfast, what to eat as a mid-afternoon snack, how to prepare dinner—but that have a direct impact on glucose control. For this reason, understanding what happens in our bodies when we eat is a necessity for those living with this disease.

However, many people with diabetes feel lost when it comes to nutrition. They receive contradictory messages from different sources, do not know how to interpret supermarket food labels, or simply have doubts that no one has resolved. This is where the role of **primary care** becomes meaningful: a close, accessible, and trusted space where professionals and patients can work together to improve this knowledge (1).

KNOWING WHERE WE START: EVALUATING TO PERSONALIZE

Not all people with diabetes have the same doubts or begin with the same level of knowledge. Some have already received information in the past, while others are newly diagnosed and everything is unfamiliar. For this reason, it is important that health professionals understand each individual's level of knowledge to design an educational program adapted to their needs.

Systematically assessing nutritional knowledge allows education to be **personalized**. It makes little sense to repeat information someone already knows, nor to assume that someone understands concepts that have »

» never been explained to them (2). In our experience, most people know, for example, that "sugar raises blood glucose." However, when we explore further, we often discover that many do not understand why an apple and a sugary soft drink do not have the same effect even though both contain sugar—and this distinction is crucial.

LEARNING TOGETHER OR INDIVIDUALLY: BOTH APPROACHES CAN WORK

When discussing nutritional education, the question often arises: is it better to learn in groups or individually? The answer is that both formats have advantages, and ideally the choice should depend on each person's needs and preferences.

Individual education allows the content to be fully adapted to the individual's situation: their food preferences, financial resources, family structure, and schedules. It is particularly useful when there are complex situations or barriers to understanding that require more personalized attention.

On the other hand, groups offer something very valuable: mutual support. When you hear another person with diabetes explain how they solved a problem similar to yours, when you share experiences and realize that you are not the only one with doubts or difficulties, learning becomes different. Studies show that well-organized group education can achieve outcomes as good as individual education and, in addition, create support networks that often continue beyond the sessions (3).

ESSENTIAL KNOWLEDGE FOR MANAGING DIABETES EFFECTIVELY

There are certain nutrition concepts that truly make a difference in the daily life of someone with diabetes. Let us review them in a simple way.

UNDERSTANDING CARBOHYDRATES

Carbohydrates (bread, pasta, rice, legumes, fruit, sugar) are the nutrients that most influence blood glucose levels. However, not all carbohydrates act in the same way. Understanding the difference between eating lentils with vegetables and drinking a sugary soda helps anticipate how your body will respond. Learning to estimate carbohydrate portions gives individuals greater control over their diabetes (4).

INTERPRETING NUTRITION LABELS

When you go to the supermarket, do you know what to look for on food labels? Learning to identify how many carbohydrates and what types they contain, the type of fats present, and the real serving size indicated on the label allows more informed decisions to be made ***(Figure 1)***. This is a skill that develops with practice and is extremely useful.

PLANNING MEALS IN A PRACTICAL WAY

Theory is important, but what really matters is knowing how to put it into practice. How to organize a weekly menu that is balanced, varied, and realistic. What to do when eating outside the home. How to enjoy celebrations without losing glycemic control. These are the daily situations that truly make a difference.

LEARNING BY DOING: A PROVEN STRATEGY

Nutritional education is not effective if it remains purely theoretical. Health professionals are increasingly convinced that learning must occur through practice—experimenting, making mistakes, »

FIGURE 1

» and correcting them. Therefore, activities such as bringing food packages from the supermarket and learning together how to read labels, or working with practical scenarios where each person decides what they would do in different situations, are highly effective. Some centers even organize cooking workshops to prepare healthy recipes. When people participate actively—when they see, touch, and try—the knowledge is retained more effectively.

New technologies can also help. There are mobile applications that facilitate recording food intake or calculating portions, and telemedicine allows professionals to maintain contact with patients between visits. However, not everyone is equally comfortable with technology, and this must be respected.[5]

UNDERSTANDING THE REASONS BEHIND RECOMMENDATIONS IS AS IMPORTANT AS KNOWING THE RECOMMENDATIONS THEMSELVES

SEEING YOUR GLUCOSE IN REAL TIME: THE BEST EDUCATIONAL ALLY

Continuous glucose monitoring systems have represented a major change in how diabetes is understood. These devices not only improve diabetes control but also serve as extraordinary educational tools (6).
"Seeing with my own eyes how my glucose rises after eating taught me more than all the previous explanations."

When people can observe in real time how their body responds to different foods, everything takes on new meaning. For example, they may discover that eating rice together with vegetables and protein slows the glucose rise, or that walking for 15 minutes after a meal helps improve control. It is firsthand learning, personalized for each individual.

CHALLENGES WE ENCOUNTER—AND HOW TO ADDRESS THEM

Organizing high-quality nutritional education programs in health centers is challenging. We all know consultations are often rushed, resources are limited, and there is not always enough time to devote to education.

However, solutions exist. Creating dedicated therapeutic education consultations, where specialized nursing professionals have quality time to work with patients, is one approach.[7] Working in multidisciplinary teams—coordinating physicians, nurses, nutritionists, and other professionals—also multiplies the results. Collaboration with community resources (patient associations, community centers, community programs) further expands possibilities (8).

From the patient perspective, barriers also exist: balancing schedules, maintaining motivation over time, or simply feeling that such programs are relevant to them. For this reason, programs must be flexible, accessible, and responsive to real needs.

BEYOND KNOWLEDGE: WHAT TRULY MATTERS

Improving nutrition knowledge is important, but it is not an end per se. What truly matters is that this knowledge translates into better diabetes control, improved quality of life, fewer complications, and, above all, greater confidence in managing one's own health.

Therefore, when evaluating whether an educational program works, we do not only assess whether knowledge has improved. We also examine whether glycated hemoglobin levels have decreased, whether time in range has increased, whether dietary habits have improved, whether individuals feel more confident making decisions about their diet, and whether overall well-being has improved (9).

YOUR FUTURE MOVES TOWARD PERSONALIZED EDUCATION

There is no single formula that works for everyone. Some people will benefit more from individualized attention, others will prefer group settings, and many will need a combination of both at different times. The important thing is that nutritional education adapts to each individual—their needs, circumstances, and preferred way of learning (10).

Much discussion now surrounds the future of precision nutrition, which considers genetics and other individual factors to refine recommendations. It is an interesting horizon, but while it develops, there is already significant room to improve the basics: dedicating quality time, truly listening to each person, communicating useful knowledge in a clear way, and supporting individuals throughout the process of change. D »

CONCLUSIONS

- Knowing each person's starting point through validated tools allows the design of educational programs truly adapted to individual needs.
- Both individual and group education can be effective; ideally, patients should be able to choose according to their preferences and circumstances.
- Educational content should focus on practical knowledge: understanding carbohydrates, learning to read nutrition labels, and planning daily meals.
- Learning by doing—through participatory activities and technologies such as continuous glucose monitoring—helps knowledge become more meaningful and lasting.
- Overcoming organizational barriers requires creating dedicated educational spaces, properly training professionals, and working collaboratively with community resources.

REFERENCES

1.- Chatterjee S, Davies MJ, Heller S, Speight J, Snoek FJ, Khunti K. Diabetes structured self-management education programmes: a narrative review and current innovations. Lancet Diabetes Endocrinol. 2018;6(2):130-142. doi: 10.1016/S2213-8587(17)30239-5
2.- Sperl-Hillen J, Beaton S, Fernandes O, et al. Comparative effectiveness of patient education methods for type 2 diabetes: a randomized controlled trial. Arch Intern Med. 2011;171(22):2001-2010. doi: 10.1001/archinternmed.2011.507
3.- Steinsbekk A, Rygg LØ, Lisulo M, Rise MB, Fretheim A. Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus: a systematic review with meta-analysis. BMC Health Serv Res. 2012;12:213. doi: 10.1186/1472-6963-12-213
4.- Norris SL, Lau J, Smith SJ, Schmid CH, Engelgau MM. Self-management education for adults with type 2 diabetes: a meta-analysis of the effect on glycemic control. Diabetes Care. 2002;25(7):1159-1171. doi: 10.2337/diacare.25.7.1159
5.- Wu Y, Yao X, Vespasiani G, et al. Mobile app-based interventions to support diabetes self-management: a systematic review of randomized controlled trials to identify functions associated with glycemic efficacy. JMIR Mhealth Uhealth. 2017;5(3):e35. doi: 10.2196/mhealth.6522
6.- Šoupal J, Petruželková L, Grunberger G, et al. Glycemic outcomes in adults with T1D are impacted more by continuous glucose monitoring than by insulin delivery method: 3 years of follow-up from the COMISAIR study. Diabetes Care. 2020;43(1):37-43. doi: 10.2337/dc19-0888
7.- Renders CM, Valk GD, Griffin SJ, Wagner EH, van Eijk JT, Assendelft WJ. Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review. Diabetes Care. 2001;24(10):1821-1833. doi: 10.2337/diacare.24.10.1821
8.- Pillay J, Armstrong MJ, Butalia S, et al. Behavioral programs for type 2 diabetes mellitus: a systematic review and network meta-analysis. Ann Intern Med. 2015;163(11):848-860. doi: 10.7326/M15-1400
9.- Thoolen B, de Ridder D, Bensing J, Gorter K, Rutten G. Beyond good intentions: the role of proactive coping in achieving sustained behavioural change in the context of diabetes management. Psychol Health. 2009;24(3):237-254. doi: 10.1080/08870440701864504
10- Evert AB, Dennison M, Gardner CD, et al. Nutrition therapy for adults with diabetes or prediabetes: a consensus report. Diabetes Care. 2019;42(5):731-754. doi: 10.2337/dci19-0014