



KETOGENIC DIET TO IMPROVE OUTCOMES IN PATIENTS WITH TYPE 2 DIABETES MELLITUS (T2DM)



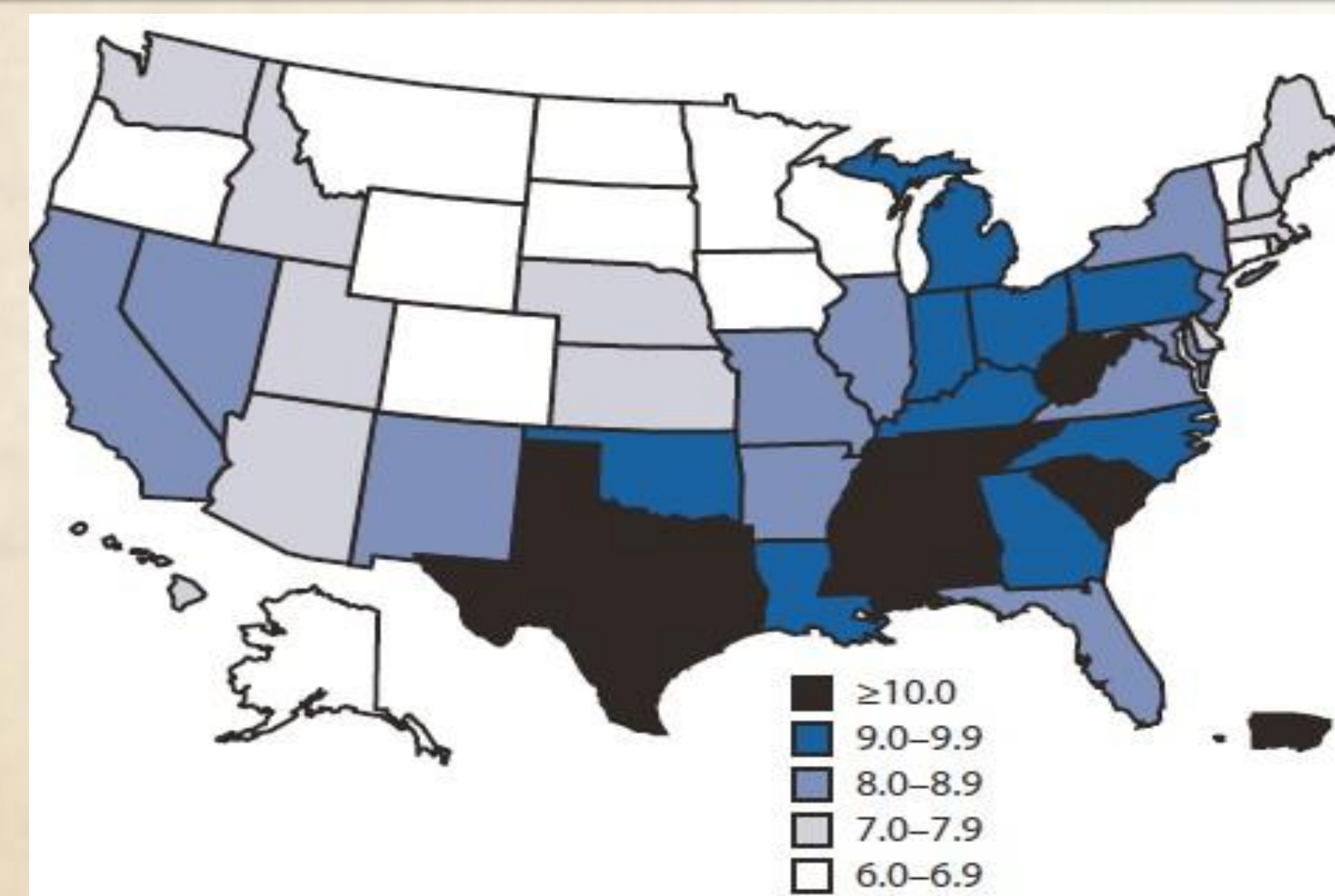
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Practice Concern

- 23.1 million T2DM cases costing \$245 billion annually (Center for Disease Control, 2015)
- 54.9 million projected cases with costs rising to \$622 billion by 2030 (Institute for Alternative Futures, 2015)
- Current dietary recommendations have failed to prevent or treat diabetes.
- Providers remain divided over diet recommendations
- Ketogenic diets (KD) show improved diabetic outcomes compared to current standard diets (SD), but remain controversial due to high fat content, safety profile, and knowledge gaps (Feinman et al., 2015)

Needs Assessment



CDC diabetes prevalence (2017)

- Texas has a diabetes prevalence of 2.8 million (11.2% of population) in 2015, costing \$23.2 billion and projected to rise in the future (American Diabetic Association, 2015)
- Texas consistently places top 10 in states with highest rate of diabetes

PICOT Question

- In Type 2 diabetes, how does KD compared to SD affect A1C levels, amount of weight loss, and daily glucose control within 1 year?

Literature Review

- UH-EBSCOhost and Texas Medical Center Health Science Library databases used with search string: “ketogenic diet diabetes”
- 7 systematic reviews (level 1 evidence), 3 randomized controlled trials (level 2 evidence) met following inclusion criteria: KD vs. SD in T2DM adult patients, full text available, utilizes randomization, peer reviewed journals
- KD vs. SD in T2DM consistently show:
 - Increased HDL, decreased A1C levels, and improved daily glucose control
 - Decrease in number of oral antidiabetic medications are seen representing large cost savings and improved quality of life
 - Significant weight loss occurs but long term effects are not seen. Lowered LDL levels show non-inferiority to SD
 - Mild side effects of tiredness, diarrhea/constipation, and lethargy are transiently seen in the induction phase of the diet (<1 week)
- No studies showed any serious adverse events on KD. Many studies show improved cardiac panels and no changes in renal panels compared to SD controls

EBP Guidelines

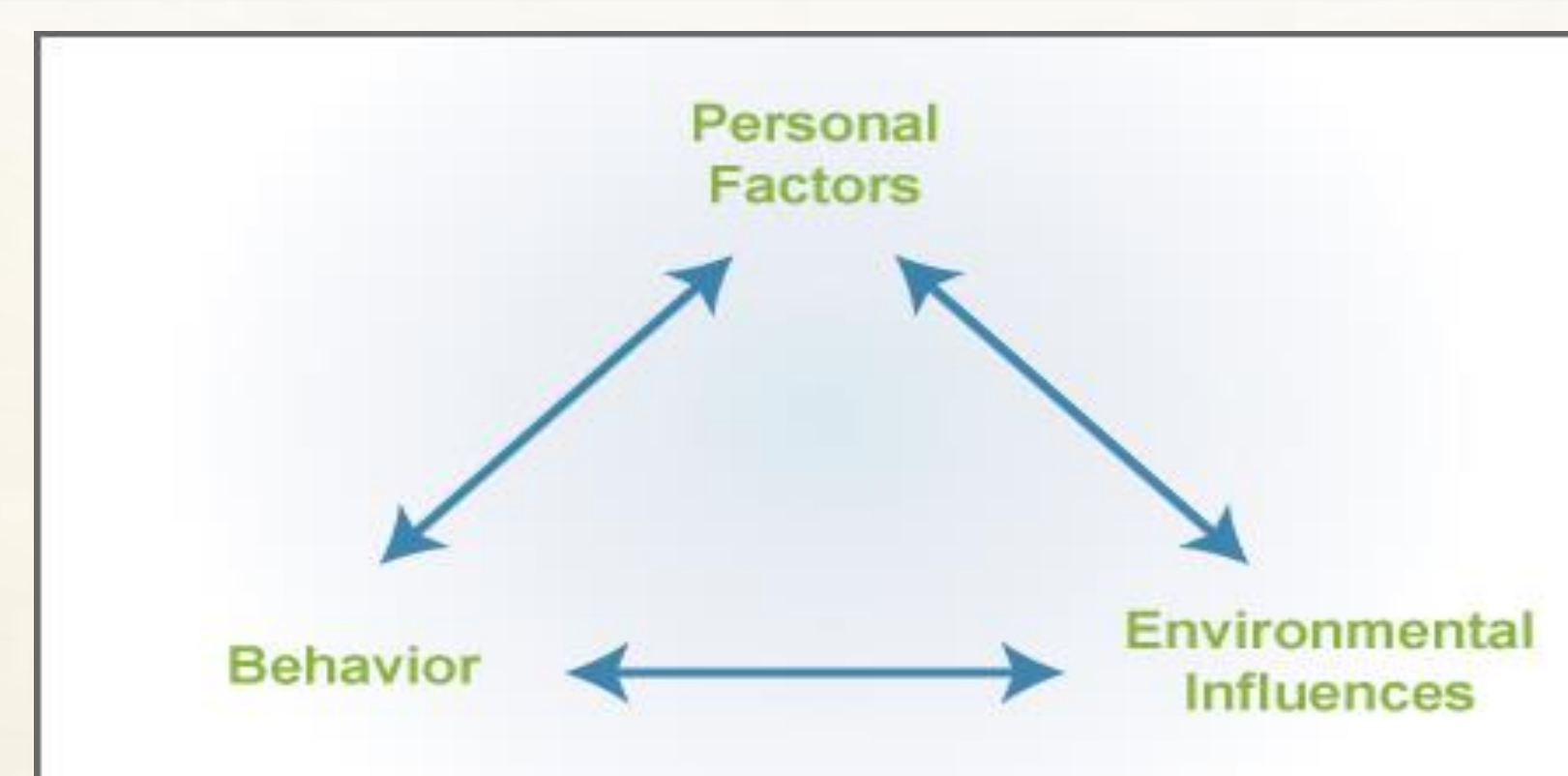
Current Guidelines

- The American Heart Association and American Diabetic Association (ADA) make no recommendations regarding specific macronutrient intake (2017)
- Emphasis is placed on hypocaloric counts and recommending specific diets to taste

Proposed Guidelines Based on Evidence

- KD is defined as less than 50g of carbohydrates (<10% daily intake), high fat (50-60%), and moderate protein (25%-30%), (Feinman et al., 2015)
- Short term use of KD is shown to be safe in patients with diabetes
- Long term research on safety and efficacy are ongoing

Theoretical Framework



Bandura's Social Cognitive Theory (2001)

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Implementation

- Confirm funding for implementation through ADA or National Institutes of Health
- Training providers in KD adoption methods is essential (meal plan, dietary logs)
- Utilize Spanish language documentation and resources. Consider alternative meals plans for cultural or religious reasons
- Encourage or establish diabetic support groups to enhance adherence
- Health and diet tracking apps are strongly encouraged to monitor macronutrient intake.
 - Obtain baseline and monitor every 3 months:
 - BMI, A1C, glucose logs, cardiovascular panel, renal panels, CBC, CMP

Evaluation

- Monitor adherence to diets through checking dietary logs and glucose logs.
- Analyze data from health tracking apps every 3 months monitoring of progress
- Expect reductions in A1C (-1.1%), BMI (-2.0 kg/m²)
- Expect increases in HDL (+4.8 mg/dL)
- Monitor renal panels, CBC, and CMP for stable kidney function and electrolyte levels

References

Available upon request

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