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Peyton Hannon

Cedarville University, pchannon@cedarville.edu

Hayley Blackburn

Cedarville University, heblackburn@cedarville.edu

Ella Kinsinger

Cedarville University, ekinsinger@cedarville.edu

Rachel Meeker

Cedarville University, rachelmeeker@cedarville.edu

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Preventing the Progression of Prediabetes to Type 2 Diabetes Mellitus through Increasing Physical Activity and Healthy Diet

Hayley Blackburn, Peyton Hannon, Ella Kinsinger, and Rachel Meeker
Cedarville University School of Nursing

PATIENT CARE ISSUE

Background & Significance of Diabetes Mellitus

- Diabetes Mellitus is a rapidly growing worldwide health phenomenon
- The number of diabetics worldwide in 1995 was 135 million people and is predicted to be 300 million people in 2025 ¹
- Prediabetes is defined by elevated blood glucose levels ²
- Early intervention can reverse the disease process progression
- A person can reduce risk of DM2 by 58% by reducing body weight by 7% and consistently exercising ²
- Decreasing body weight and increasing physical activity significantly reduces the risk of developing diabetes ²

EVIDENCE-BASED PRACTICE QUESTION

Question: What lifestyle modification, diet or exercise, has the strongest evidence base for reducing the progression of Type 2 diabetes during the prediabetic phase? What is the effectiveness of diet modification versus increased physical activity during the prediabetic phase in reducing the progression to Type 2 diabetes?

P: Adults ages 18-49 with diagnosis of prediabetes

I: Lifestyle modifications to slow progression of disease

C: Diet or exercise is more effective in decreasing disease progression

O: Determine the most effective intervention

REGISTERED NURSE INTERVIEW

Springfield Regional Medical Center Medical Surgical RN and Case Manager interviewed but unaware of hospital policy:

- Interventions are per nurse's clinical judgment, but this is not a widespread inpatient diagnosis

Springfield Regional Medical Center Diabetes Educator RN interviewed:

- Education with visual aids about diabetes and lifestyle changes accompany every diabetes diagnosis; however there is no set protocol for preclinical diabetic diagnoses

Leesburg Regional Medical Center Patient Safety Coordinator RN interviewed:

- Diet modification education is most important intervention
- There is a great need for full-time diabetic educators

METHODS

Exhausted four databases:

CINAHL, Academic Search Complete, Cochrane Database of Systematic Reviews, Food Science Source

Inclusion criteria:

Publication of research within past 7 years, focus on the prediabetic state, exercise, diet or other general lifestyle modification

Exclusion criteria:

Non-English articles, solely focused on the full onset of diabetes

Key words searched:

Prediabetic state, interventions, physical activity, prevention, diet

RESULTS

Articles Examined	9
Articles Used	6
Levels of Evidence	Four meta-analyses (Level 1) Four well designed RCTs (Level 2) One case-control study (Level 4)

SYNTHESIS OF EVIDENCE

The following lifestyle interventions were considered.

- Physical activity: two case studies ^{3,4} one literature review ⁵
 - Lesser insulin resistance ³
 - Insufficient supporting evidence ^{4,5}
- Dietary modifications: one study ⁶, two systematic reviews ^{7,8}
 - Weight and risk for developing diabetes decreased ⁶
 - No statistically significant differences between exercise alone and diet combined with exercise ⁷
 - Insufficient supporting evidence ⁸

EVIDENCE-BASED PRACTICE RECOMMENDATIONS

- Hospital protocols should not be amended based on current results
- Patient education regarding both diet and physical activity modifications should continue
- More controlled studies need to occur before protocol changes can be recommended

LIMITATIONS

- Further research is needed for recommendation regarding clinical practice
- There is no evidence that reveals one intervention, diet or physical activity, as more effective than the other
- More high-quality studies needed

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