



BACKGROUND/SIGNIFICANCE

According to Whitehead et al (2020) prediabetes is a condition that indicates a sustained level of hyperglycemia that is lower than the threshold for type 2 diabetes mellitus (T2DM). Globally, previous estimates of prediabetes vary according to the test and diagnostic criteria used. In the US glycated hemoglobin (HbA1c) is used to diagnose type 2 diabetes mellitus. The CDC (2020) estimates 88 million people aged 18 years or older have prediabetes or 34.5% of the US population. Of those 65 years or older, 24.2 million people have prediabetes (CDC, 2020). Of those with prediabetes, each year an estimated 5–10% develop T2DM with the majority eventually developing the condition, particularly those who are overweight or obese. Adults over 25 years of age with increased A1c levels between 5.7%-6.4% have a greater likelihood of developing T2DM and the known complications including kidney failure, delayed wound healing, increased susceptibility to infection, heart disease, potential amputations, and retinopathy (Whitehead et al., 2020). In addition, the patient would face accruing healthcare costs over their lifetime.

The following PICO question was developed to guide this review of the literature: In adult patients with increased A1c levels between 5.7% - 6.4%, what impact do lifestyle changes, increased exercise, and changes in diet have compared to current lifestyle on A1c?

METHODS

- This review examined methods to prevent further the progression of a pre-diabetic state to a diabetic state. Research terms included “exercise, nutrition, diabetic diet, and education” related to diabetes and pre-diabetes utilizing the CINAHL database through Cumberland University Vise Library. For the purpose of this review, five studies were found in peer reviewed journals, written in English, and were published within the past five years to be appropriate to answer the proposed PICO question.
- Dorothea Orem’s Self-Care Theory was used to guide this literature review. The Self-Care Theory focuses on the act of assisting others in provision and management of self-care to maintain or improve effective functioning (Black, 2020). This theory supports the proposed PICO question in that it examines the prevention in the progression of pre-diabetes to a diabetic state through therapeutic lifestyle changes and nutritional management. The focus will be on the individual patient’s ability to perform self-care and providing education about these interventions. If the pre-diabetic patient does not perceive the benefits of lifestyle changes and nutrition to lower HbA1c, the risk of progressing to type 2 diabetes is greater.



RESULTS

- Coppell and colleagues (2017) conducted a clinical trial to evaluate if structured dietary advice impacted weight and A1c levels in a group of prediabetes adults (n=157). The intervention group lost a mean of 1.3 kg more than the control group (p < 0.001). Mean HbA1c, BMI and waist circumference decreased in the intervention group and increased in the control group, but differences were not statistically significant. This study finding confirmed the feasibility and acceptability of primary care nurses providing structured dietary advice to patients with prediabetes in busy general practice settings.
- Olson and Rosenberg (2019) conducted a systematic review of different educational interventions that nurses can employ in effective teaching of diabetics and pre-diabetics. The study found that development goal setting led to increased behavior changes, small, frequent educational sessions increased the level of knowledge, skills, and confidence the patient attained before hospital discharge. While many patients may be referred to a certified diabetic educator, medical-surgical nurses still need to provide guidance, support, and reinforcement to optimize the patient’s ability to self-manage, achieve goals, and increase patient self-efficacy to optimize healthy outcomes.
- Mina, Faezeh and Hamid (2019) conducted a RCT control group received routine care education for diabetes; experimental group received six sessions of 45-60 min training with the extended parallel process model. This study did not include socioeconomic factors that would contribute to a patient’s access to healthy food choices and factors that would allow for free time to exercise. The results of ANCOVA after the removal of the pretest showed a significant difference between the two groups in terms of dietary compliance (P<0.01). Accordingly, 28% of posttest changes could be due to the extended parallel pattern training.
- Whitehead et al. (2020) conducted a mixed-methods study and examined 157 (85 intervention; 72 control) adults with prediabetes. The intervention group lost a mean 1.3 kg more than the control group. Most of the intervention group indicated either a high level of readiness or some readiness to make food changes. While just over half demonstrated weight loss at the end of the six-month period, most participants did not achieve their predetermined weight loss goal. Although only seven participants met their weight loss goal, just over half of participants demonstrated weight loss at the end of the 6-month period. Gender, ethnicity and budget were not related to weight at 6 months.
- Lindberg et al. (2017) found that incorporating lifestyle changes such as a 10-week exercise program still produced good results in diabetics. A non-weight bearing exercise program for people with diabetes, severe peripheral neuropathy and foot ulcers seemed feasible and safe. All participants completed the program with a session attendance from 85 to 95%, and high satisfaction (≥9 points on a 10-point numeric rating scale). Only minor adverse events occurred, and ulcers were reduced for all participants. Further studies are needed to confirm these findings; however, lifestyle changes are never too late to make.

PRACTICE IMPLICATIONS

Education provided by nurses is important and constitutes one of their major roles in patient care. Olson and Rosenberg (2019) showed that developed and increased behavior changes can produce positive patient outcomes in adults with prediabetes. Utilizing the most current evidence-based best practice of lifestyle changes is essential with patient education. Diabetes prevention can be overwhelming to the newly diagnosed or pre-diabetic individual. Utilizing small and frequent educational sessions with this patient population has proven more beneficial in enhancing the knowledge of an individual to make healthy lifestyle changes. These changes can then be reinforced in subsequent sessions. Encouraging self-management and self-efficacy should also be encouraged.

CONCLUSIONS

The Self-Care Theory puts forth the idea that a person wants to be well and will make the changes and efforts if effectively empowered to do so. Empowering and educating patients as supported in the findings of this literature review showed that when armed with the correct education, goals, and empowerment, patients can effectively make the changes necessary for them to improve their pre-diabetic state. Through knowledge and empowerment, many individuals can achieve weight loss and diabetes control. More research is still needed to evaluate best practices for lifestyle changes.

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