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Technology and Human Connection to Prevent Diabetes in Rural United States

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Brief Report

Technology and Human Connection to Prevent Diabetes in Rural United States

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A B S T R A C T

Keywords:
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This quality improvement pilot project implemented a diabetes prevention program using physical activity trackers and human connection to increase physical activity (PA) and reduce the risk of diabetes among adults with prediabetes from a rural primary care clinic. The outcomes included PA steps, PA minutes, the achievement of self-established PA goals, hemoglobin A1C level, weight, and body mass index. During the 3 months of the project, PA steps significantly increased, and most participants reached self-established PA goals. Overall, the program outcomes were positive. Participants and health care team members reported additional benefits and drawbacks to the project, confirming the study's feasibility.

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In the United States (US), the prevalence of prediabetes and type 2 diabetes mellitus (T2DM) is continuously increasing, suggesting that the interventions included in diabetes prevention programs (DPPs) are not successfully improving epidemiologic data. Health care professionals continue to be challenged to motivate individuals to change lifestyle practices.¹ The difficulties are even greater in the rural US, where the prevalence of diabetes is higher than in urban areas, and the disparities in health care access continue to be alarming.² To face the challenge, a DPP was implemented as a pilot quality improvement project using physical activity trackers (PATs) and human connection to increase physical activity (PA) and reduce the risk of progressing to T2DM among rural individuals with prediabetes.

Literature Review

Since the late 1990s, short-term and long-term DPP studies have provided evidence that individuals in a lifestyle modification program have a significantly lower incidence of T2DM than individuals receiving metformin or placebo.^{3–6} Different programs have been launched to address the increasing burden of individuals with prediabetes and T2DM within the US, such as the National Diabetes Prevention Program, the PreventT2 curriculum, and the Centers for Disease Control and Prevention CDC Diabetes Prevention Recognition Program.^{7–9}

The behaviors associated with diabetes prevention are PA (a minimum of 150 minutes per week of moderate-intensity activity), weight loss (achieve and maintain a minimum of 7% weight loss), and healthy diet.¹⁰ One of the most important actions individuals can do to improve their health is to be physically active.¹¹ Despite the intensity or frequency, PA promotes a 13% reduction in mortality risk.¹² In rural areas, the population reports that exercise facilities and walking tracks/sidewalks are rare and that most exercise programs are impractical and not relevant to them.¹³ When direct supervised PA programs are not available, home-based programs may be a feasible option without impacting adherence or dropout rates.¹⁴

PATs provide an innovative way to increase PA. These trackers can motivate and improve self-regulation and self-efficacy by providing immediate feedback on step count, a visible, tangible reminder of a pledge to increase activity and progress toward a daily goal.¹⁵ PATs are suitable for continuous long-term use, and specific models present high validity of step count and high inter-device reliability for steps, sleep, energy expenditure, and distance.¹⁶ Age is not a barrier for PATs, but training and support are needed for the adequate use of PATs.^{17,18} Short-term drop-off is expected as well as a short-term decline in exercise confidence, reinforcing the need for a human component.¹⁸

Purposeful human connection between health care providers and patients offers the opportunity for a holistic approach, promotes motivation, improves health behaviors, and may enhance the impact of PATs.¹⁹ Health coaching programs focused on collaborative goal-oriented relationships between health care providers and patients to change lifestyle habits could be effective in improving glycemic control.²⁰ Also, delivery modalities such as in person, telephone based, electronic, or a combination of methods can be effectively used, along with health behavior change theories.²⁰

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