## 45th Biennial Convention (16-20 November 2019)

# Using Fitbits and Follow-Up to Increase Physical Activity and Prevent Diabetes

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Type 2 diabetes mellitus (T2DM) is a major public healthcare problem that continues to increase at an alarming rate around the world, with even more individuals affected by prediabetes. Physical activity, healthy eating, and weight loss are known behavioral modifications. Needs assessment results from a rural primary care clinic and its surrounding public health department revealed that the incidence of T2DM is increasing and healthcare team members lack effective tools to help motivate individuals in making behavioral changes. This is especially challenging in rural America, where obesity rates are higher. The literature supports the use of Fitbits for increasing physical activity and emphasizes the importance of awareness, motivation, and individualized follow-up. The objective of this program was to evaluate the effectiveness and feasibility of using physical activity trackers (Fitbits) and individualized follow-up with coaching strategies as a motivational tool for rural individuals with prediabetes to increase and sustain physical activity as one component of a diabetes prevention program (DPP). The overarching goal was to delay or prevent T2DM in a primary care population. Participants included 13 adults with prediabetes and clinic staff from a rural primary care clinic. Quantitative and qualitative data were collected over six months in two phases (Phase 1: Behavioral Change-Months one to three and Phase 2: Sustainability-Months four to six) from Fitbits, biophysical data, surveys, semi-structured interviews, and field notes. Key findings include that more participants increased their physical activity level by the end of Phase 1 (when there was more healthcare team interaction) than at the end of Phase 2 (when there was less healthcare team interaction). Key points of this program include: (a) increasing physical activity is one component of diabetes prevention, but there needs to be behavioral change and sustainability; (b) healthcare team relatedness matters, but it takes time and effort; (c) rural areas pose challenges, but these challenges can be overcome; and (d) Fitbit costs are less than treating annual care of individuals with diabetes. This DPP suggests that Fitbits and frequent follow-up with individualized coaching strategies by healthcare team members can be a cost-effective motivational tool to increase physical activity among rural individuals with prediabetes. However, feasibility of sustaining this six-month program for participants and in primary care is questionable.

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**Title:**

Using Fitbits and Follow-Up to Increase Physical Activity and Prevent Diabetes

**Keywords:**

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**Abstract Summary:**

This diabetes prevention program suggests that Fitbits and frequent follow-up with individualized coaching strategies by healthcare team members can be a cost-effective motivational tool to increase physical activity among rural individuals with prediabetes. However, feasibility of sustaining this six-month program for participants and in primary care is questionable.

**Content Outline:**

I. Introduction

A. Example: Increasing incidence of type 2 diabetes mellitus (T2DM)-Overarching clinical challenge
B. Example: Increasing incidence of prediabetes-Precursor to T2DM but modifiable
C. Example: Unhealthy lifestyle behaviors (insufficient physical activity, obesity, unhealthy eating)- Precursor to T2DM but modifiable
D. Example: Inconsistent motivation to make behavioral changes-Precursor to T2DM but modifiable
II. Body
A. Main Point #1: Clinical Challenge-Increasing incidence of T2DM and prediabetes
1. Supporting point #1: Increasing incidence of T2DM
a) 30.3 million individuals (one out of 10) have T2DM, but one out of four are unaware (Centers for Disease Control and Prevention [CDC], 2017).
2. Supporting point #2: Increasing incidence of prediabetes
a) 84.1 million individuals (more than one out of three) have prediabetes, but nine out of ten are unaware (CDC, 2017).
3. Supporting point #3: Individuals with prediabetes are at high risk of developing T2DM.
a) According to the 2017 Diabetes Standards of Care Guidelines, those with prediabetes are at high risk for developing T2DM and are key candidates for diabetes prevention efforts (American Diabetes Association [ADA], 2017).
b) Physical activity and weight loss are both relevant to T2DM and have been identified as behavioral modifications to decrease the incidence of T2DM (ADA, 2017; Herman, 2015).
B. Main Point #2: Individuals with insufficient physical activity and inconsistent motivation to make behavioral changes may contribute to the development of T2DM.
1. Supporting point #1: Insufficient physical activity is common.

a) One out of five adults (21%) meet the 2008 Physical Activity Guidelines (CDC, 2014).
2. Supporting point #2: Inconsistent motivation may lead to insufficient physical activity
a) Many individuals are either unmotivated or not sufficiently motivated to participate in physical activity recommendations (American Heart Association [AHA], 2016; CDC, 2015).
C. Main Point #3: Technology and human connection may help motivate individuals to increase physical activity and prevent T2DM.
1. Supporting point #1: Physical activity trackers can influence behavioral change.
a) Physical activity tracking devices provide an innovative way to assist individuals in getting motivated to increase physical activity, keeps them engaged in daily physical activity by using an accelerometer that measures movement acceleration and provides minute-to minute breakdown of physical activity, as well as increases an individual's physical activity awareness throughout the day (Ball et al., 2015; Gualtieria, Rosenbluth, & Phillips, 2016; Kooiman et al., 2015).
b) When used with a theory-driven approach, physical activity trackers may provide an efficient way to motivate individuals to improve self-regulation and adopt healthy behaviors (Cadmus-Bertram, Marcus, Patterson, Parker, & Morey, 2015).
2. Supporting point #2: Individualized follow-up and coaching can support behavioral change.
a) Although physical activity trackers have the potential to facilitate behavior change on their own, the addition of human engagement and support may enhance their impact (Ball et al., 2015; Lyons, Lewis, Mayrsohn, & Rowland, 2014; Patel, Asch, & Volpp, 2015).
b) Health coaching is considered a holistic approach to improving health behaviors and focuses on internal motivation, as well as encourages goal-setting that the individual defines (Djuric et al., 2017).
III. Conclusion
A. Example: Key points of this program include: (a) increasing physical activity is one component of diabetes prevention, but there needs to be behavioral change and sustainability; (b) healthcare team relatedness matters, but it takes time and effort; (c) rural areas pose challenges, but these challenges can be overcome; and (d) Fitbit costs are less than treating annual care of individuals with diabetes.
B. Example: This diabetes prevention program suggests that Fitbits and individualized follow-up with individualized coaching strategies by healthcare team members can be a cost-effective motivational tool to increase physical activity among rural individuals with prediabetes.
C. Example: Feasibility of sustaining this six-month program for participants and in the primary care setting is questionable.

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**Author Summary:** Dr. Theresa Dachel is an assistant professor and adult-gerontology primary care nurse practitioner at the University of Wisconsin-Eau Claire, College of Nursing and Health Sciences. Dr. Dachel's presentation is based on her Doctor of Nursing Practice project which utilizes technology, motivation, physical activity, and human connection. Dr. Dachel created and implemented a diabetes prevention program using Fitbits and frequent follow-up with individualized coaching strategies to motivate rural individuals with prediabetes to increase their physical activity.