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ORIGINAL ARTICLE

# Impact of isCGM on quality of life in overweight individuals with impaired glucose tolerance or mild diabetes: secondary analysis of a pilot randomized controlled study

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## Abstract

**Background** The impact of intermittently scanned continuous glucose monitoring (isCGM) on quality of life (QoL) for overweight individuals with impaired glucose tolerance (IGT) or mild type 2 diabetes (HbA1c ≤ 7.0%) remains unclear.

**Methods** In this secondary analysis of our pilot weight-loss RCT, 40 overweight individuals (BMI, ≥ 25 kg/m$^2$) were randomized to isCGM (isCGM plus diet-and-exercise therapy) or control (diet-and-exercise therapy alone) groups. QoL was assessed with the SF-36 questionnaire over a 6-month intervention.

**Results** After exclusion of participants with missing data or who withdrew consent, 17 individuals in the isCGM group (median [interquartile range] age, 51.0 [47.0–62.5] years; BMI, 35.0 [32.2–39.0] kg/m$^2$) and 16 individuals in the control group (age, 51.0 [41.8–65.0] years; BMI, 29.4 [25.3–35.8] kg/m$^2$) were analyzed. No significant differences in QoL changes over the intervention period were observed between the two groups. Within the isCGM group, the Mental Component Summary (MCS) score improved significantly (from 44.8 to 48.4, $P < 0.05$), whereas the Role/Social Component Summary score declined significantly (from 52.2 to 44.8, $P < 0.05$). Scan frequency correlated positively with baseline Vitality, Mental Health, and MCS scores. Changes in time above range and standard deviation for sensor glucose were negatively correlated with changes in the General Health score.

**Conclusion** isCGM did not improve QoL scores relative to the control group for overweight individuals with IGT or mild diabetes. Within-group analysis suggested that isCGM improved mental QoL but lowered perceived social QoL. Tailored support addressing psychological and social needs may maximise isCGM benefits.

**Keywords** Intermittently scanned continuous glucose monitoring (isCGM) · Randomized controlled trial · Glycemic variability · Overweight · Quality of life · Self-monitoring

## Introduction

The prevalence of obesity has increased markedly over the past few decades and is now recognized as a major public health issue in many countries [1]. Obesity increases the risk for development of chronic diseases such as type 2 diabetes mellitus (T2DM) [2, 3], treatment of which is often challenging, making the prevention or delay of diabetes onset a public health priority. Lifestyle interventions that promote weight loss in obese individuals are effective for preventing or ameliorating T2DM [4–7], with self-monitoring being a recommended component of behavioral therapy and a standard element of obesity treatment [8–10].

Continuous glucose monitoring (CGM) systems have become widely adopted to guide treatment strategies for diabetes [11]. One such system, intermittently scanned continuous glucose monitoring (isCGM), allows individuals to self-monitor glucose variability by scanning a sensor inserted in the upper arm with the use of a dedicated touchscreen reader or smartphone [12]. CGM is primarily used by individuals with diabetes who take insulin, but it has had limited

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Extended author information available on the last page of the article

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