Contents available at ScienceDirect

Diabetes Research and Clinical Practice

journal homepage: www.elsevier.com/locate/diabres

International Diabetes Federation

Comparing a telephone- and a group-delivered diabetes prevention program: Characteristics of engaged and non-engaged postpartum mothers with a history of gestational diabetes

Siew Lim [a,b,*], James A Dunbar [c], Vincent L Versace [a], Edward Janus [f,g], Carol Wildey [b], Timothy Skinner [d], Sharleen O'Reilly [e]

[a] Faculty of Health, School of Medicine, Deakin Rural Health, Warrnambool, Victoria, Australia
[b] Health Systems Improvement Unit, Centre for Population Health, School of Health and Social Development, Deakin University, VIC, Australia
[c] Centre for Population Health Research, Deakin University, VIC, Australia
[d] School of Psychological and Clinical Sciences, Charles Darwin University, NT, Australia
[e] Institute for Physical Activity and Nutrition, Deakin University, VIC, Australia
[f] General Internal Medicine Unit, Western Health, Sunshine Hospital, St Albans, VIC, Australia
[g] Department of Medicine, Melbourne Medical School – Western Precinct, University of Melbourne, Sunshine Hospital, St Albans, VIC, Australia

ARTICLE INFO

Article history:
Received 12 December 2016
Accepted 16 February 2017
Available online 27 February 2017

Keywords:
Engagement
Lifestyle modification
Postpartum women
Lifestyle intervention
Diabetes prevention

ABSTRACT

Aims: To explore the acceptability of a telephone- or a group-delivered diabetes prevention program for women with previous gestational diabetes and to compare the characteristics associated with program engagement.

Methods: Postpartum women participated in a lifestyle modification program delivered by telephone (n = 33) or group format (n = 284). Semi-structured interviews on barriers and enablers to program engagement (defined as completing ≥ 80% sessions) were conducted before (Group) and after (Group and Telephone) interventions. The Health Action Process Approach theory was used as the framework for inquiry. Psychological measures were compared between engagement subgroups before and after group-delivered intervention.

Results: In the telephone-delivered program 82% participants met the engagement criteria compared with 38% for the group-delivered program. Engaged participants (Group) had significantly higher risk perception, outcome expectancy, and activity self-efficacy at baseline ($P < 0.05$). There was a greater decrease in body weight (−1.45 ± 3.9 vs −0.26 ± 3.5, $P = 0.024$) and waist circumference (−3.56 ± 5.1 vs −1.24 ± 5.3, $P = 0.002$) for engaged vs non-engaged participants following group program completion.

Conclusions: Telephone delivery was associated with greater engagement in postpartum women. Engagement was associated with greater reduction in weight and waist circumference. Further studies are required to confirm the effectiveness of telephone-delivered program for diabetes prevention in postpartum women.

* Corresponding author at: Centre for Population Health Research, Deakin University, Burwood, VIC 3125, Australia.
E-mail address: siew.lim@deakin.edu.au (S. Lim).

http://dx.doi.org/10.1016/j.diabres.2017.02.026
0168-8227/

1. Introduction

Diabetes and gestational diabetes mellitus (GDM) are growing problems worldwide with a global prevalence of diabetes in adults estimated at 9–10% and 7% of all pregnancies are complicated by GDM [1,2]. In addition, 30–84% of women with GDM will experience it in a subsequent pregnancy [3]. Women with previous gestational diabetes have a 7-fold increased risk of developing type 2 diabetes (T2DM) [4]. The risk of developing diabetes doubles by 5 years postpartum following GDM pregnancy [4], and may potentially be averted with early prevention efforts. Studies have consistently shown poor dietary and physical activity behaviours among women with histories of GDM [5,6], which may contribute to their increased risk of developing diabetes. Women with histories of GDM are a growing population in need of diabetes prevention programs, but existing prevention programs are typically developed for an older population.

Lifestyle modification is effective in preventing diabetes in the general population when participants are engaged [7,8]. Women with a history of GDM and impaired glucose tolerance at the time of intervention showed substantially reduced TD2 M onset following participation in an intensive diabetes prevention program (DPP) [9]. However other interventions in postpartum women have seen inconsistent effects [10–15], possibly owing to the difficulties in adhering to healthy behaviours during this busy period. Recruiting and retaining postpartum women in lifestyle interventions is inherently challenging [16,17] – the median attrition rate reported in systematic review is 17% and this can rise up to 42% in some studies [12,17]. For those successfully retained, poor engagement or attendance can result in a non-significant changes in outcome measures, despite the number of sessions offered [15]. Time, childcare duties, tiredness and financial constraints were among the barriers to lifestyle change described by postpartum women with histories of GDM [18–22]. As engagement is the central issue with postpartum mothers, a theoretically-grounded investigation into factors associated with engagement in this group is needed to guide future program implementation.

Home-based DPPs (delivered via internet or telephone) are a potential solution to the multiple participation barriers faced by postpartum women with previous GDM [23,24]., Although various combinations of strategies and delivery methods have been investigated to prevent diabetes in women with a history of GDM [25], very few are based on previously demonstrated effective models of diabetes prevention. The Health Action Process Approach (HAPA) is a behavioural change model shown to be effective in preventing diabetes in the general population [26,27] but its application to the postpartum population has not been explored.

Our study aimed to explore the demographic and psychological characteristics associated with post-recruitment engagement in a group- or a telephone-based DPP for postpartum women.

2. Subjects

Participants were recruited prospectively and retrospectively into a randomized-controlled, DPP trial (Mothers After Gestational Diabetes in Australia, MAGDA) described in full within our protocol and results publications [28–30]. Briefly, prospective recruitment involved approaching women in an urban antenatal clinic soon after GDM diagnosis (~24–28 weeks). Eligible women were provided with a patient information and consent form to be returned via pre-paid envelope within 4 weeks. If consent forms were not received within that timeframe, follow-up contact was made. Once consent was received, participants were contacted at 3 months postpartum to arrange for baseline testing.

Women with diagnosed with GDM are recorded on the National Gestational Diabetes Register (NGDR) in Australia. Retrospective recruitment occurred using: an NGDR mail-out to women living in relevant postcodes in the study areas in Adelaide (South Australia) and Melbourne (Victoria); referrals from a private obstetrician (South Australia); and hospital records database mining (South Australia). Prospectively, postpartum women who had GDM diagnosed in their most recent pregnancy were approached and assessed for eligibility. Exclusion criteria included pre-existing diabetes, pregnancy, cancer, severe mental illness, substance abuse, myocardial infarction in the preceding three months, and difficulty with English.

The RCT consisted of 573 women randomized to the group-delivered program (n = 284) or usual care (n = 289). All participants randomized to the group-delivered program were examined in the current study as group-delivered program participants. After the completion of MAGDA trial, MAGDA participants who did not receive any intervention due to either 1) randomization to the usual care arm, or 2) inability to attend group locations after being randomized to group-delivered arm, were recruited to participate in the telephone-delivered program. Written informed consent was obtained from all participants once eligibility was confirmed. Recruitment commenced January 2011 and the last participant completed in October 2015.

3. Study design

3.1. *Group-delivered program*

The group-delivered program was an RCT of an evidence-based lifestyle modification DPP modified for postpartum women with previous GDM and was based on an effective DPP for older adults [28,29]. The group-delivered program consisted of two phases: an active intervention and a maintenance phase. The active intervention was completed over three months and comprised of an individual session in the woman's home and five fortnightly group sessions delivered by a trained facilitator. The maintenance phase consisted of two follow-up facilitator telephone calls at six and nine months. The study was approved by the relevant ethics