

The use of eHealth and health coaching in postnatal diabetes prevention, in women with history of gestational diabetes

Bolou Angeliki^{1,*} and Gourounti Kleanthi²

¹ School of Health Sciences, Institute for Lifecourse Development: Centre for Chronic Illness and Ageing, Faculty of Education, Health & Human Sciences, University of Greenwich, London, UK.

² Midwifery Department, University of West Attica, Athens, Greece.

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Abstract

This literature review explores the role of eHealth and health coaching in assisting prevention of type 2 diabetes in women with history of gestational diabetes mellitus (GDM). The integration of electronic health (eHealth) and mobile health (mHealth) technologies, including telemedicine, smartphone apps, and mixed-method approaches, has emerged as a crucial strategy in healthcare delivery. These technologies address postnatal barriers such as lack of support, time constraints, and childcare issues, enhancing accessibility to diabetes prevention interventions. The review presents evidence from various studies, including randomized controlled trials and ongoing research projects, indicating positive impacts on engagement, adherence, and follow-up rates when utilizing remote interventions through smartphone apps and health coaching. Notably, the use of telemedicine during the COVID-19 pandemic has further underscored the potential benefits of delivering care remotely. The focus on postnatal diabetes prevention in women with a history of GDM is particularly pertinent, given the increased risk of developing type 2 diabetes. The inclusion of partners and families in interventions, highlights a holistic approach to promoting a healthy lifestyle. While the results are promising, the review acknowledges the inconclusive nature of current evidence, emphasizing the need for further research to establish the long-term efficacy and acceptance of these interventions. Continued efforts to refine these strategies and expand research will contribute to a better understanding of their impact, ultimately paving the way for targeted and effective diabetes prevention in this high-risk population of women with a history of GDM.

Keywords: Postnatal; Prevention; Diabetes; eHealth; Health coaching

1. Introduction

1.1. The use of eHealth to deliver interventions

The use of electronic health (eHealth) or mobile health (mHealth) has become crucial nowadays as more healthcare providers are using specific systems or apps to monitor patient's health, update electronic records, prescribe medication and provide telemedicine services.⁽¹⁾ The term telemedicine refers to the remote contact and support a patient can receive from their healthcare provider, with the use of text messages, images, phone calls or video consultations. Using this technology, clinicians can discuss a diagnosis, review results, discuss treatment options, arrange follow-up appointments and provide online resources to improve the patient's awareness.⁽²⁾ Some of the benefits of telemedicine are the reduction of hospital visits and treatment costs.⁽³⁾ This has been particularly the case in the COVID-19 pandemic. There is a recent shift in opinions about mHealth with supporting evidence suggesting that receiving care from healthcare professionals remotely can positively impact adherence, engagement and follow-up rates to interventions.^(4, 5)

* Corresponding author: Bolou Angeliki

Gestational diabetes mellitus (GDM) is the most common endocrine complication in pregnancy and increases the risk of development of type 2 diabetes later on in life. Currently there is no agreement on universal postnatal prevention strategies for this population, who has an 11-fold increased risk to develop type 2 diabetes.⁽⁶⁾ In countries where the healthcare system offers postnatal screening for diabetes only 18.5% of women attend postnatal testing.^(7,8) The typical barriers that explain this low attendance are lack of support, lack of time and lack of childcare. These are known obstacles that often restrict women from attending postnatal follow-up or screening appointments. With the use of mHealth and telemedicine, services can become more accessible to this population in this critical period and women's knowledge of their diabetes risk can be improved^(4,9,10). This has been particularly the case in the COVID-19 pandemic.

2. Postnatal diabetes prevention with the use of eHealth

A randomised controlled trial conducted in 2017 to postpartum women focusing on lifestyle modifications to prevent the development of type 2 diabetes, has shown that 82% of women met the engagement criteria when the intervention was delivered via their telephone compared with 38% engagement when the lifestyle intervention was delivered in group sessions; they have also shown that greater engagement was associated with greater weight loss.⁽¹¹⁾ In comparison, the MAGDA-DPP study⁽¹²⁾ has shown a low level of participation in the face-to-face group sessions, with only 10% of women attending all sessions, but unfortunately did not include qualitative interviews as part of the design of the full-scale trial, thus missing the opportunity to identify contributing factors influencing low participation. The intervention included 6 face-to-face sessions and 2 phone calls.⁽¹²⁾ The result of the MAGDA study might have been different if women were given the option to have more online consultations such as in Lim's (2017) study⁽¹¹⁾. Indeed, another study group in Australia developed the Health-e mums app for diabetes prevention in women with GDM, using material from the MAGDA study. They investigated how to deliver the intervention remotely using telephones and health coaching. To improve the app design, they ran focus groups with women to discover how to improve user-experience. This app is still at developmental stages and results on the effectiveness of the app for diabetes prevention are yet to be published.^(13,14) A different smartphone app aiming to change the cardiometabolic risk of women with GDM history in the first 5 years post GDM diagnosis, is the TRIANGLE app. Focused on implementing behavioural modification strategies and using health coaching to support lifestyle change, this study is the first one that takes a multi-theoretical approach on how to support habit-change in order to promote the establishment of a healthy lifestyle.⁽¹⁵⁾

More studies are implementing a mixed methods approach, where the delivery of the intervention is a mixture of face-to-face and remote consultations. A recent RCT in China used this method to engage women from rural areas to adhere to a lifestyle intervention for type 2 diabetes prevention (it included a mixture of group sessions and phone calls). This study recruited women with a history of GDM 6 weeks postnatally and followed their progress for 18 months. The study has reported 6 and 18 months efficacy results.⁽¹⁶⁾ It showed statistically significant difference between the two groups regarding type 2 diabetes development, the group that received the intervention had lower OGTT results and waist circumference compared to the routine arm, it also showed that women with high abdominal circumference benefited more from the intervention. The attendance rate was 72%. This study demonstrated the efficacy of a mixed method approach to the delivery of the intervention.⁽¹⁷⁾

The 'Baby Steps' study, which is another RCT that used a mobile web application, is focused on diabetes prevention but promotes mainly physical activity. In this UK based study, women were recruited within 60 months following a GDM diagnosis and were followed for 12 months, the study comprised of two face-to-face sessions and the use of an app with interactive education components.⁽¹⁸⁾ Women were recruited 2 years after a GDM diagnosis. The qualitative results that have been published on the 'Baby Steps' app report that the app was useful as a motivational and monitoring tool⁽¹⁹⁾ but the quantitative results revealed that only 66% of participants downloaded the app. The study did not show statistical difference on physical efficacy at 12 months.⁽²⁰⁾

One protocol that was published in 2020 is for the 'Face-it' study, this is a Danish study that will deliver the intervention by providing home-visits initially, which the health visitors will run and later will use online counselling and online videos with health coaches through an app.⁽²¹⁾ The baseline assessment is at 10-14 weeks post-delivery and the study will run till 12 months after the delivery, eligible women must have GDM in pregnancy and the primary outcome is weight loss at 12 months and not diabetes prevention.⁽²¹⁾ One of the strengths of this study is that it also includes the partners in the intervention sessions with the health coaches and includes the family in the development of a healthy lifestyle which could prevent diabetes. Evidence about the systematic development of the study design have been published, but there is no report on the results yet.⁽²²⁾ The MERIT feasibility study will introduce the Mediterranean diet in the postnatal period and will use an app and a health coach to deliver the intervention in the first postnatal year, but the results are not published yet.⁽²³⁾

The use of smartphone apps to deliver interventions to prevent or delay the onset of diabetes in women with or a history of GDM can potentially address low engagement issues that were previously linked to interventions delivered to women in postnatal period. Currently, more results are needed in this population, as most research groups have only published the study protocols and/or are focused on developing their research design, or they use the app as a complementary tool. To date, based on the aforementioned RCTs, the results are inconclusive regarding the use of an app in regards to the effectiveness of type 2 diabetes prevention in women with GDM history.

3. Health coaching for diabetes prevention

Recent studies focused on diabetes prevention have employed health coaching to support participants to set and follow goals, to facilitate behavioural change, to increase their confidence and knowledge about diabetes prevention and to adopt a healthy lifestyle.^(24, 25) Health coaches should be trained to follow specific diabetes prevention programmes and hold a health coaching certificate. Health coaches empower participants to change and improve their health behaviours by guiding them to apply what they have learned in education/intervention sessions.⁽²⁶⁾

Currently a few studies that are small in sample size have used health coaching in women with recent history of GDM for diabetes prevention, in the previous section health coaching was offered alongside the use of an app, the two studies mentioned in this part are focused on health coaching as the main intervention. One ongoing study that has only published the protocol, offers a choice to the participants (N=116) to opt for the lifestyle programme that they find suitable based on their needs, one option is health coaching, other options include the DPP or weight watchers.⁽²⁴⁾ This is the first study that provided several different options to participants but effectiveness cannot be measured based on the sample size and it is not clear based on the protocol if the health coaching sessions will be online or face to face.

The STAR-MAMA is a study tailored to Latino women with history of GDM that uses health coaching delivered via phone calls in order to support women postnatally to change their lifestyle and prevent type 2 diabetes through weight loss. This RCT was not able to prove efficacy, as the sample size was small with only 65 women completing the follow up (181 initially randomised). The study showed that results were more favourable for English speakers and for participants who perceived their risk of developing diabetes as high.⁽²⁵⁾ In people diagnosed with type 2 diabetes digital health coaching has demonstrated effectiveness in the management of diabetes and the adoption of a healthy lifestyle^(26, 27) more research is needed in women with GDM history on acceptability and effectiveness of health coaching.

4. Conclusion

In conclusion, the integration of eHealth and health coaching in the prevention of type 2 diabetes in women with history of gestational diabetes holds significant promise. The utilization of telemedicine, mobile health apps, and mixed-method approaches has shown positive impacts on engagement, adherence, and follow-up rates. These technologies have the potential to overcome barriers such as lack of support, time constraints, and childcare issues, making postnatal diabetes prevention more accessible to a broader population. The evidence from various studies, including randomized controlled trials and ongoing research projects, highlights the effectiveness of remote interventions, particularly when delivered through smartphone apps and include the use of health coaching. However, the results are still inconclusive, and more research is needed to establish the long-term efficacy and acceptance of these interventions. As the field progresses, the ongoing development of innovative strategies, such as the inclusion of partners and families in interventions, exemplifies a holistic approach to promoting a healthy lifestyle and preventing type 2 diabetes in women with a history of GDM. Continued efforts in refining these interventions and expanding research will contribute to a better understanding of their impact and pave the way for more targeted and effective diabetes prevention strategies in this high-risk population.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflicts of interest

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