



Text Messaging as a Means to Engage Patients in the Postpartum Period

**HELEN B. GOMEZ, MD,
and MATTHEW K. HOFFMAN, MD, MPH**

*Department of Obstetrics and Gynecology, Christiana
Care Health System, Newark, Delaware*

Abstract: The use of electronic information and telecommunications technologies to support health systems has been increasingly recognized as an important tool in postpartum care. An emerging body of research has suggested that telehealth during the postpartum period may alleviate racial disparities and transportation barriers, while improving access to health resources. Thus, the purpose of this article is to describe current barriers to postpartum health, review prevalence and access to mobile devices, and current uses of text messaging in the postpartum period. We describe key areas of telemedicine utilization including lactation services, blood pressure monitoring, diabetes screening, mental health services, weight loss programs, and access to contraception in the postpartum period. Future research and clinical work should aim to further examine the use of telehealth among postpartum individuals.

Key words: telemedicine, postpartum, text-based

of obstetrics and gynecology. Telehealth—and particularly text messaging—has promising features to address the provision of obstetrical and postpartum services. Trends toward smart phone use are part of a broader shift toward mobile technology that is shaping the ways in which women communicate. In a recent statement by the American College of Obstetricians and Gynecologists (ACOG), “telehealth provides comparable health outcomes when compared with traditional methods of health care delivery without compromising the patient–physician relationship, and it also has been shown to enhance patient satisfaction and improve patient engagement.”¹

Introduction

Telemedicine has garnered national attention and is increasingly used in nearly every aspect

Correspondence: Helen B. Gomez, MD, Christiana Care Health System, Department of Obstetrics and Gynecology, 4755 Oglethorpe Stanton Road, Suite 1905, Newark, DE. E-mail: helen.gomez@christianacare.org
The authors declare that they have nothing to disclose.

Current Barriers to Postpartum Care

Despite one half of pregnancy-related deaths occurring postpartum, there exist systematic barriers to the utilization of postpartum care. Postpartum care is key to addressing emotional and social wellness, breastfeeding issues, contraceptive

counseling, pregnancy spacing, and long-term health management in addition to chronic disease treatment following delivery.

In an effort to address care in the weeks following birth, ACOG called for policy and guideline changes toward a new paradigm shift for management of this period, now referred to as the “fourth trimester.”² New guidelines should be tailored to the individual needs to women with contact as early as the first 3 weeks postpartum. A second and more comprehensive assessment of social, psychological, and emotional well-being is recommended no later than 12 weeks postpartum.² However, incorporating the ACOG guidelines into clinical practice poses a significant and ongoing challenge and up to 40% of women do not attend any postpartum visit and the timing of in person visits may not correspond with the timing of significant patient events. Optimizing care will require policy changes to meet the health needs of women while accounting for known barriers to adherence and provider limitations.

In a survey of 600 randomly sampled US postpartum care providers, an average of only 24.4 ± 11.7 minutes were available to spend on a postpartum visit.³ Thus, any movement toward improved postpartum care calls for restructuring how that care is provided.² This underscores the need for development of innovative models to expand care and accessibility for postpartum women, many of who may be at risk for postnatal events.

Reported patient barriers including lack of childcare or transportation, and demanding work schedules without parental leave are reducing compliance rates in attendance of postpartum visits among women postpartum.⁴ The most socially and economically vulnerable women are also greatest at risk for nonattendance. In a study of over 6000 women in New York, having Medicaid or no health insurance

was the strongest predictor for postpartum visit nonattendance. Such divides are further exacerbated among women living in rural areas wherein access to obstetrical services is becoming progressively sparse.⁵

Women under the age of 20 and women who identify as Hispanic or Latino in ethnicity were less likely to return for a postpartum visit. Nonattendance at their postpartum visit means that vulnerable women are missing opportunities for screening and treatment. This is further compounded by the fact that women who do not attend their postpartum visit may be at higher risks for undiagnosed postpartum depression, unaddressed infant feeding problems, and delayed contraception uptake resulting in short interval pregnancies and unintended pregnancy.⁶

Prevalence of Smartphones

The widespread availability and affordability of smartphones has enabled their prolific use. In a Pew Center survey, nearly 81% of Americans own a smart phone, a dramatic increase from 35% in 2011.⁷ Smartphones are particularly ubiquitous among reproductive aged women, with 92% of 18 to 29-year-old women owning a device.⁷ As such, there is now a growing reliance on smartphones for health information and communication as over 58 percent of Americans use their device for health informatics.⁸ Health Apps have received specific attention with nearly 77% of all smart phone owners having downloaded a health app in the past.

Smartphones are effectively bridging the gap in connectivity and have outpaced more traditional means of accessing the web. Hand-held devices are alleviating the digital divide created by broadband with lower income Americans exhibiting a sharp uptake in ownership over the past year, according to a pew research center survey conducted in November 2016.⁷

Patient Acceptance

Understanding patient preferences can guide efforts to support the most vulnerable patients. Patient engagement and active participation in health management is a core feature of text-based care. Multiple studies have demonstrated that women are willing and able to participate in remote programs. Text messaging systems are a feasible method of engaging patient and increasing participant satisfaction.^{9,10}

In a survey study of patient preferences, women desired remote communication by phone or through the electronic medical record portal during the postpartum period. Many patients reported comfort with remote monitoring skills, including measuring weight (91%) and blood pressure (BP) (82%). There were no differences in remote monitoring comfort by patient characteristics including age, race, insurance, or parity.¹¹ Thus, remote text-based care can serve to include a diverse population of women with different social economic backgrounds.

Current Models of Telehealth Postpartum Care

Health care systems must meet the demands of evolving trends toward providing time-conscious, convenient, patient-centered care. The mobile phone-based approach to health care problems offers health care providers several advantages. First, text-based care enables bidirectional communication and data processing in an affordable and immediate way. Remote texting also engages a diverse population of women, particularly women in vulnerable groups and those of lower socioeconomic status. Platforms using automated messaging allows for seamless and efficient communication with minimal use of office-based resources. Finally, texting avoids transportation barriers that are particularly present in rural and at risk populations and

time restraints associated with postpartum visits.

Text-based care has been used for innovative approaches to postpartum care and for at-home monitoring. The capability of telemedicine has been significantly expanded with the consumer electronics market and the ability to use patient's cell phones as secure and compliant clinical endpoints.

Established virtual programs for prenatal care have pioneered to incorporate remote postpartum visits with excellent patient acceptance and efficacy. Patients are able to utilize monitoring equipment at home from their pregnancy monitoring. For example, the MultiCare program in Washington utilizes a nurse practitioner for a 1 week postpartum visit while a Mayo clinic program uses a phone call at 1 week following delivery. Available services include, but are not limited to, lactation support, BP monitoring, diabetes screening, mental health services, weight loss support, and contraception counseling, described in more details below.

Lactation Support

Lactation support has been identified as an essential postpartum service but is often limited in resource-poor communities. Thus, "tele-lactation" has emerged to address issues in accessing Certified Lactation Counselor (CLC) among breastfeeding mothers postpartum. Various remote and electronic services allow women to connect with a CLC through videoconferences on personal tablets and smartphones.¹² In a review of 23 different lactation services delivered through phone calls, videoconference, text messaging, mobile apps and interactive websites, tele-lactation services were found to be both feasible and acceptable, with high patient satisfaction.¹³ Similarly, women who video conferenced with a lactation consultant on a weekly basis were unanimously comfortable with discussing issues and felt that services were

beneficial to their care.¹⁴ Ultimately, women participating in text-based services were significantly more likely to continue breastfeeding several months postpartum as compared with those with standard care [76.2 vs. 67.3%, respectively; odds ratio (OR): 1.63, 95% confidence interval (CI): 1.10-2.41].¹⁵

Thus, text-based care enhances postpartum care of breastfeeding mothers, allowing for timely delivery of services while avoiding travel costs.

Text-based BP Monitoring

Multiple remote monitoring programs have been proposed in response to growing rates of hypertensive disease as the leading cause of maternal morbidity and mortality and obstetrical readmission following delivery. Annualized costs for readmission for hypertensive disorders has been estimated to eclipse \$730,000,000 in the United States.¹⁶ Recognizing the high prevalence of postpartum hypertensive complications, the ACOG Task Force on Hypertension in Pregnancy recommends monitoring BP at 72 hours postpartum and again in 7 to 10 days in women diagnosed with a hypertensive disease of pregnancy.¹⁷ Telehealth technology has been proposed for managing hypertension disorders including chronic hypertension, mild and severe preeclampsia, superimposed preeclampsia, and hemolysis, elevated liver enzymes, low platelet count syndrome. Mobile devices could further help alleviate resource disparities in care.

In one particular model, patients were trained on the use of BP devices before hospital discharge.¹⁸ A nurse-driven management algorithm was followed using a HIPPA-compliant, text-based platform. Investigators found that remote, bidirectional communication was feasible and led to high engagement, retention, and patient satisfaction, with 83% of women opting to continue text communication beyond 3 weeks postpartum, and another 94% reported being satisfied with a text-

based program. Other investigators have similarly found that 90% of the women found remote testing to be simple and 78% of women preferred mobile communication to in-office testing.^{10,19}

In a randomized controlled trial of women presenting with either gestational hypertension or preeclampsia, requiring postpartum antihypertensive treatment, patients were randomized to self-management with texting or usual care. Self-management with texting entailed daily home BP monitoring and automated medication reduction through telemonitoring. Remote monitoring through telehealth was associated with better BP control at 6 weeks postpartum with adjusted differences in systolic pressure -5.2 (95% CI: -9.3 to -1.2) and diastolic pressure -5.8 (95% CI: -9.1 to -2.5) mm Hg. Diastolic BP remained significantly lower in those self-managing to 6 months: adjusted difference -4.5 (-8.1 to -0.8) mm Hg. Text-based monitoring was found to be promising with high levels of recruitment, retention, and compliance among women compared with standard treatment.²⁰ In a similar randomized controlled trial of 206 postpartum women using text-based surveillance compared with traditional office-based follow-up, investigators found that patient were overwhelmingly [92.2% vs. 43.7%; adjusted OR: 58.2 (16.2 to 208.1), $P < 0.001$] more compliant with remote testing and text-based monitoring was more effective in obtaining BPs.²¹

Text-based Diabetes Screening

Gestational diabetes mellitus affects 8% of all pregnancies in the United States but disproportionately affects women in racial/ethnic minority communities.²² Recognizing the high prevalence of type 2 diabetes following Gestational diabetes mellitus, ACOG recommends screening at 4 to 12 weeks postpartum with a 75 g, 2-hour oral glucose tolerance test.²³ However, compliance rates with postpartum screening has been reported as low as 20%

nationally.²⁴ Text-based applications have been proposed to address key barriers in care. In a prospective, cluster-controlled study, 2 hospital sites in Canada experienced a doubling of compliance with postpartum screening following the implementation of reminder texts (text group 28% vs. standard group 14%; $P=0.01$).²⁵

In our own institution, we developed an easy-to-use mobile application to reliably report fasting blood glucose values in the postpartum period in women with a history of gestational diabetes with the primary aim of evaluating its ability to diagnose type 2 diabetes mellitus. In a study of 446 women randomized to home screening with fasting blood glucose through text-based monitoring and usual care, text-based screening successfully captured all patients with type 2 diabetes with 100% sensitivity (86% to 100%), 86% specificity (77% to 93.0%), and a 100% (94% to 100%) negative predictive value. Text-based screening nearly doubled compliance rates compared with standard screening (standard care 25% vs. texting 48%, $P<0.001$) leading to higher detection rates of type 2 diabetes (standard care 5.4 vs. texting 12.1%, $P<0.02$). At baseline, we found disparities in compliance with in-person 2-hour oral glucose tolerance test as non-Black women were significantly more likely than black women to complete standard screening (White 28.5% vs. Black 11.1%, $P<0.02$). Text-based care had an increase in compliance among black women and narrowed the racial gap in care (non-Black women 49.4% vs. Black women 34.5%, $P<0.12$).^{26,27}

Text-based Mental Health Services

Postpartum depression and mental disorders are the most common medical problem new mothers face, occurring in 15% of women after delivery with significant neonatal and maternal sequela. Perinatal

depression affects 1 in 7 women, representing one of the most common complications of the postpartum period.²⁸ Low-income mothers are particularly at risk with compounding financial stressors.

Text-based and mobile applications are an underutilized tool for the diagnosis and treatment of mood disorders. Research to support use of telemedicine for postpartum mental health is limited. A systematic review of 10 studies showed cognitive behavioral therapy through telemedicine (phone, e-mail, app/websites) overall resulted in improvements in maternal depression.²⁹ Preliminary data from another systematic review on telemedicine for postpartum mood disorders suggested improvement in symptoms at 3 to 12 months postintervention.³⁰

Text-based screening has shown improved detection rates of at-risk women. In a study of 937 women receiving screening for postpartum depression through text messaging, investigators reported agreement between the texted screen and the Edinburgh Postnatal Depression Scale. Participants reported high rates of satisfaction with using text messaging technology.³¹ Similarly, text-based treatment of mood disorders has been shown to be effective.

Supportive text messages to at-risk mothers 4 times weekly for 6 months were well-accepted, and may serve as a simple, inexpensive adjunct therapy well-suited to cross socioeconomic boundaries and provide private support for at-risk mothers suffering from postpartum depression.³²

Text-based Weight Loss Support

Text-based care offers a valuable resource for promoting healthy eating and exercise habits. In a systematic review of 10 studies, women using a mobile phone (text messaging or short message service or mobile phone app) intervention had significant

reduction in weight (-2.55 kg, 95% CI: -3.81 to -1.28) after 3 to 12 months postpartum³³ compared with women in usual care. Similarly, obese women enrolled in a 16-week text-based calorie tracking and dietary counseling at 4-week postpartum lost significantly more weight (-5.8 kg vs. standard care -1.6 kg; $P=0.03$).³⁴

Remote, electronic care allows participants to receive direct message and track progress. In one interventional study, women received a 13-week program that provided web-based education, pedometer messaging, and an internet forum. Women had individualized weight goals and feedback about progress toward goals was displayed graphically and through text messages. Online messages further allowed study participants to interact with each other with a pseudonym.³⁵ In these ways, telehealth promoted educational resources, monitored individual goals and created a forum for interaction.

Text-based weight loss programs are particularly effective among women in low-income communities. In a 12-month, cluster randomized trial of 371 postpartum women enrolled in Special Supplemental Nutrition Program for Women, Infants, and Children (WIC program), the addition of internet-based programs resulted in a statistically significant greater weight loss over 12 months. The telehealth group experienced greater mean 12-month weight loss compared with the standard care group (3.2 kg in the intervention group vs. 0.9 kg in standard care group, $P<0.001$; difference, 2.3 kg; 95% CI: 1.1-3.5).³⁶

Text messaging also keeps participants actively engaged in a postpartum weight loss intervention. In a randomized controlled trial of obese, ethnic minority, socioeconomically disadvantaged mothers in the first year after childbirth, patients were randomly assigned to either technology-based intervention using self-monitoring text messages or usual care control. After 14 weeks of treatment, the

technology-based intervention participants had significantly greater weight loss (-2.9 ± 3.6 kg) than usual care (0.5 ± 2.3 kg; adjusted mean difference: -3.2 kg, 95% CI: -6.2 to -0.1 kg, $P=0.04$). One-third of intervention participants and no control participants lost $>5\%$ of their initial body weight at follow-up.³⁷

Text-based Contraception Counseling

The rate of unintended pregnancy remains unacceptably high at $\sim 50\%$.³⁸ Recognizing the importance of pregnancy timing, ACOG recommends prioritizing contraception counseling and birth spacing at the postpartum visit. Minority and low-income communities are particularly vulnerable because of the complex history of sterilization and fertility abuse on marginalized women.

Text-based care provides a platform for postpartum, contraception education. Telehealth is associated with improved compliance and continuation of oral contraceptive pills. In a randomized controlled trial of 962 participants receiving daily educational text messages, 64% of participants randomized to the intervention were still oral contraceptive pills users compared with 54% of the routine care group ($P=0.005$). Participants receiving text messages were also more likely to continue oral contraception at 6 months (OR: 1.44, 95% CI: 1.03-2.00).³⁹

Text-based contraceptive education during the postpartum period has shown similar efficacy. In a 3-arm randomized controlled trial, 300 postpartum women were randomized to 1-way text messaging versus 2-way text messaging versus standard care.

Both 1-way and 2-way texting increased early uptake of contraception by 16 weeks postpartum; the probability of birth control uptake of in 1-way was 72%, 73% in 2-way, compared with 57% in

usual care, $P=0.03$ and 0.02 for 1-way and 2-way versus control, respectively.⁴⁰

In a similar study, 260 women were randomized to receiving family planning-focused text messages weekly until 6 months postpartum versus usual care. At 6 months postpartum, 69.9% women receiving texting reported contraceptive use, compared with 57.4% in control (relative risk = 1.22; 95% CI: 1.01-1.47; $P=0.04$). In this way, texting has shown to increase contraceptive use among women in the postpartum period. Patients with immediate initiation of postpartum contraception avoid short birth spacing as well as pregnancy before the resumption of menses.⁴¹

Text-based Care General Considerations and Conclusions

Text-based care is an effective, feasible, and acceptable modality for delivering care in the postpartum period. Text messaging is an innovative format that overcomes barriers to in-person appointments, including transportation and time from childcare, work, or school responsibilities. These social and economic barriers are particularly evident in racial/ethnic minority communities, contributing to health disparities.

Text messaging has become ubiquitous, especially among young racial/ethnic minorities who are increasingly connected through their mobile devices and allows patients to interact on a personalized schedule at a low cost.

Existing data has shown that text-based care improves the delivery of lactation support, BP monitoring, diabetes screening, mental health services, weight loss support, and contraception counseling during the postpartum period. Further work is required to better understand text messaging as a communication tool during the postpartum period and how suboptimal access to postpartum services can undermine clinical management among

new mothers. Future research should investigate the effects of integrating text-based screening into routine care on disease management. Moreover, we need to better understand how to optimize electronic resources for patients and how to develop and best utilize texting resources for sustained improvements in maternal and neonatal outcomes. Given the prominent financial and psychological stresses during the postpartum period, the impact of telemedicine on adherence to screening is likely significant and warrants future exploration. Such efforts should be directed beyond identifying the problem, and instead, focus on the development and utilization of evidence-based interventions. Although many questions remain unanswered, it is clear that addressing issues of access to postpartum care will be critical to the goal of improving quality of care and outcomes for all women, but especially those most underserved.

References

1. ACOG. Implementing Telehealth in Practice. ACOG Committee Opinion 798. *Obstet Gynecol.* 2020;135:e73–e79.
2. ACOG. Optimizing postpartum care. ACOG Committee Opinion No. 736. *Obstet Gynecol.* 2018;131:e140–e150.
3. Krishnamurti K, Simhan H, Borrero S. Competing demands in postpartum care: a national survey of U.S. providers' priorities and practice. *BMC Health Services Research.* 2020;20:284.
4. Bennett W, Ennen C, Carrese J. Barriers to and facilitators of postpartum followup care in women with recent gestational diabetes mellitus: a qualitative study. *J Womens Health.* 2011;20:239–245.
5. Kozhimannil K, Interrante J, Tofte A, et al. Severe maternal morbidity and mortality among indigenous women in the United States. *Obstet Gynecol.* 2020;135:294–300.
6. Wilcox A, Levi E, Garrett J. Predictors of non-attendance to the postpartum follow-up visit. *Matern Child Health J.* 2016;20(suppl 1):22–27.
7. Monica A. Mobile Technology and Home Broadband. Pew Research Center; 2019. Available at: <https://www.pewresearch.org/internet/2019/06/13/mobile-technology-and-home-broadband-2019/>. Accessed December 12, 2020.

8. Mobile Fact Sheet. Pew Research Center Internet & Technology; 2019. Available at: <https://www.pewresearch.org/internet/fact-sheet/internet-broad-band/>. Accessed December 12, 2020.
9. Himes K, Donovan H, Wang S, et al. Healthy beyond pregnancy, a web-based intervention to improve adherence to postpartum care: randomized controlled feasibility trial. *JMIR Hum Factors*. 2017;4:e26–e53.
10. Hoppe K, Williams M, Thomas N, et al. Telehealth with remote blood pressure monitoring for postpartum hypertension: a prospective single-cohort feasibility study. *Pregnancy Hypertens*. 2019;15:171–176.
11. Peahl A, Novara A, Heisler M, et al. Patient preferences for prenatal and postpartum care delivery. *Obstet Gynecol*. 2020;135:1038–1046.
12. Uscher-Pines L, Mehrotra A, Bogen D. The emergence and promise of telelactation. *Am J Obstet Gynecol*. 2017;217:176–178.
13. Ferraz Dos Santos L, Borges R, de Azambuja D. Telehealth and breastfeeding: an integrative review. *Telemed J E Health*. 2020;26:837–846.
14. Rojjanasrirat W, Nelson E, Wambach K. A pilot study of home-based videoconferencing for breastfeeding support. *J Hum Lact*. 2012;28:464–467.
15. Fu I, Fong D, Heys M, et al. Professional breastfeeding support for first-time mothers: a multicentre cluster randomised controlled trial. *BJOG*. 2014;121:1673–1683.
16. Mogos MF, Salemi JL, Spooner KK, et al. Hypertensive disorders of pregnancy and postpartum readmission in the United States: national surveillance of the revolving door. *J Hypertens*. 2018;36:608–618.
17. ACOG Task Force on Hypertension in Pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. *Obstet Gynecol*. 2013;122:1122–1131.
18. Hauspurg A, Lemon L, Quinn B, et al. A postpartum remote hypertension monitoring protocol implemented at the hospital level. *Obstet Gynecol*. 2019;134:685–691.
19. Ganapathy R, Grewal A, Castleman J. Remote monitoring of blood pressure to reduce the risk of preeclampsia related complications with an innovative use of mobile technology. *Pregnancy Hypertens*. 2016;6:263–265.
20. Cairns A, Tucker K, Leeson P, et al. Self-management of postnatal hypertension: the SNAP-HT Trial. *Hypertension*. 2018;72:425–432.
21. Hirshberg A, Downes K, Srinivas S. Comparing standard office-based follow-up with text-based remote monitoring in the management of postpartum hypertension: a randomised clinical trial. *BMJ Qual Saf*. 2018;27:871–877.
22. Zhou T, Sun D, Li X, et al. Prevalence and trends in gestational diabetes mellitus among women in the United States, 2006–2016. *Diabetes*. 2018.
23. ACOG. Gestational diabetes. ACOG Committee Opinion 190. *Obstet Gynecol*. 2018;131:e49–e64.
24. Stasenko M, Cheng Y, McLean T, et al. Postpartum follow-up for women with gestational diabetes mellitus. *Am J Perinatol*. 2010;27:737–742.
25. Shea A, Shah B, Clark H, et al. The effectiveness of implementing a reminder system into routine clinical practice: does it increase postpartum screening in women with gestational diabetes? *Chronic Dis Canada*. 2011;31:58–64.
26. Gomez H, Shlossman P, Hoffman M, et al. A novel text-based mobile app alleviates racial disparities and improves detection of type II diabetes. *Am J Obstet Gynecol*. 2020;222:s724.
27. Gomez H, Shlossman P, Hoffman M, et al. A novel text-based app for the diagnosis of type 2 diabetes in the postpartum period. *Am J Obstet Gynecol*. 2020;222:s63.
28. Curry S, Krist A, Owens D, et al. Interventions to prevent perinatal depression: US Preventive Services Task Force Recommendation Statement. *JAMA*. 2019;321:580–587.
29. Nair U, Armfield N, Chatfield M, et al. The effectiveness of telemedicine interventions to address maternal depression: a systematic review and meta-analysis. *J Telemed Telecare*. 2018;24:639–650.
30. Lee E, Denison F, Hor K, et al. Web-based interventions for prevention and treatment of perinatal mood disorders: a systematic review. *BMC Pregnancy Childbirth*. 2016. Doi: <https://doi.org/10.1186/s12884-016-0831-1>.
31. Lawson A, Dalfen A, Murphy K, et al. Use of text messaging for postpartum depression screening and information provision. *Psychiatr Serv*. 2019;70:389–395.
32. Broom M, Ladley A, Rhyne E, et al. Feasibility and perception of using text messages as an adjunct therapy for low-income, minority mothers with postpartum depression. *JMIR Ment Health*. 2015;16:E4–E24.
33. Sherifali D, Nerenberg K, Wilson S, et al. The effectiveness of health technologies on weight management in pregnant and postpartum women: systematic review and meta-analysis. *J Med Internet Res*. 2017;19:e337–e375.
34. Colleran H, Lovelady C. Use of MyPyramid Menu Planner for moms in a weight-loss intervention during lactation. *J Acad Nutr Diet*. 2012;112:553–558.
35. Kim C, Draska M, Hess M, et al. A web-based pedometer programme in women with a recent history of gestational diabetes. *Diabet Med*. 2012;29:278–283.
36. Hagobian T, Brannen A, Hatley K, et al. Effect of an internet-based program on weight loss for low-

- income postpartum women: a randomized clinical trial. *JAMA*. 2017;317:2381–2391.
37. Herring S, Cruice J, Bennett G, et al. Using technology to promote postpartum weight loss in urban, low-income mothers: a pilot randomized controlled trial. *J Nutr Educ Behav*. 2014;46:610–615.
 38. ACOG. Increasing access to contraceptive implants and intrauterine devices to reduce unintended pregnancy. Committee Opinion Number 642. *Obstet Gynecol*. 2015;126:e44–e48.
 39. Castano P, Bynum J, Andres R, et al. Effect of daily text messages on oral contraceptive continuation: a randomized controlled trial. *Obstet Gynecol*. 2012;119:14–20.
 40. Unger J, Ronen K, Perrier T, et al. SMS communication improves exclusive breastfeeding and early postpartum contraception in a low to middle income country setting: a randomised trial. *BJOG*. 2018;125:1620–1629.
 41. Harrington E, Drake A, Matemo D. An mHealth SMS intervention on postpartum contraceptive use among women and couples in Kenya: a randomized controlled trial. *Am J Public Health*. 2019;109:934–941.