Results of a Needs Assessment to Guide the Development of a Website to Enhance Emotional Wellness and Healthy Behaviors During Pregnancy

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ABSTRACT

In preparation for developing a website to enhance emotional wellness and healthy lifestyle during the perinatal period, this study examined women's informational needs and barriers. Seventy-four women who were pregnant or had given birth completed an online survey inquiring about information needs and preferred sources related to psychosocial aspects and lifestyle behaviors. Information related to healthy diet choices and weight management, followed by exercise, was rated highly as a need. Information related to depression, stress, and anxiety was also rated as important. Health-care providers and the Internet were found to be preferred sources of information. Evidence-based websites can serve as a powerful low-cost educational resource to support and reinforce the health promotion advice received from their health-care providers.

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Promoting mental health and healthy behaviors during pregnancy is important to optimize maternal and infant health outcomes. Psychological factors including greater depressive symptoms, higher stress, anxiety and behavioral factors including

physical inactivity and excess gestational weight gain are risk factors for adverse gestational and infant health outcomes (Grote et al., 2010; Littleton, Bye, Buck, & Amacker, 2010; Simas et al., 2012; Tobias, Zhang, van Dam, Bowers, & Hu, 2011).

The bidirectional relationship between psychological and behavioral factors must also be considered. For instance, although physical activity can reduce depressive symptoms, the presence of depression has also been shown to be associated with physical activity (Da Silva et al., 2012). A better understanding of women's needs in the areas of mental health and healthy behaviors during pregnancy along with barriers to attaining these needs would better inform interventions designed to promote psychological and lifestyle factors during the perinatal period.

Although pregnancy is a joyful event for most women, it is also a period of psychosocial adjustment, which can be associated with emotional distress, pregnancy-specific stressors, and worries (Leight, Fitelson, Weston, & Wisner, 2010; Lobel et al., 2008; Woods, Melville, Guo, Fan, & Gavin, 2010). Anxiety, stress, and depressed mood are prevalent during the transition to parenthood, negatively impacting birth outcomes and maternal quality of life (Dunkel Schetter & Glynn, 2011; Melville, Gavin, Guo, Fan, & Katon, 2010; Verreault et al., 2012; Woods et al., 2010). In the course of routine prenatal care, the emotional experiences that can occur during pregnancy and the early postpartum period are inadequately assessed and addressed (Halbreich, 2005; Thio, Oakley Browne, Coverdale, & Argyle, 2006). Even when women are identified as high risk for perinatal depression, and receive a referral, only a few ultimately engage in treatment (Kim et al., 2010). A few studies have identified maternal barriers and preferences for mental health care during the perinatal period. Lack of time, fear of judgement/stigma, lack of trust, lack of provider availability, and cost have been identified as barriers to mental health treatment during the postpartum period (Jesse, Dolbier, & Blanchard, 2008; Kim et al., 2010; Maloni, Przeworski, & Damato, 2013). Maloni et al. (2013) found that most women (90%) would use the Internet to help them cope with postpartum depression. Women expressed interest in web-based content features that provided information, strategies to enhance coping, and exercises to practice skills to address symptoms. These studies have mainly focused on the treatment of depression and have not considered barriers and preferences to enhance or preserve emotional wellness during the perinatal period.

In addition to maintaining emotional wellness during pregnancy, engaging in healthy behaviors such as optimal nutrition to achieve a healthy

weight gain and regular physical activity are important. Recent studies out of Canada (Begum, Colman, McCargar, & Bell, 2012; Kowal, Kuk, & Tamim, 2012), the United States (Carreno et al., 2012; Simas et al., 2012; Weisman, Hillemeier, Downs, Chuang, & Dyer, 2010), and Australia (Chung et al., 2013) indicate that between 47.5% and 74% of women are gaining above the revised 2009 Institute of Medicine guidelines (Rasmussen & Yaktine, 2009). Short- and long-term consequences on maternal and child health have been associated with excess gestational weight gain (GWG) including increased risk of birthing a large for gestational age infant (Simas et al., 2012), cesarean surgery, excess postpartum weight retention, and an overweight child (Margerison Zilko, Rehkopf, & Abrams, 2010). Lack of knowledge or conflicting information from different sources has been found to be a factor related to excess GWG. A recent Canadian study found that despite the publication of the revised GWG recommendations in 2009, only 1 in 10 women reported that they were counseled to gain the correct amount of weight during pregnancy (McDonald et al., 2011). Moreover, only 28.5% reported that their health-care provider had made a recommendation about how much weight they should gain. This figure is much lower than the proportion reported (50%) in a study conducted in the United States (Ferrari & Siega-Riz, 2013).

Physical activity during pregnancy is associated with reduced risks of pregnancy complications (Hegaard, Pedersen, Nielsen, & Damm, 2007; Liu, Laditka, Mayer-Davis, & Pate, 2008); better mental health (Davis & Dimidjian, 2012; Pivarnik, Chambliss, & Clapp, 2006); and fetal benefits including lower fat mass, improved stress tolerance, and advanced neurobehavioral maturation (Melzer et al., 2010). Current guidelines recommend that all pregnant women without contraindications (i.e., pre-eclampsia, ruptured membranes, premature labor) participate in regular aerobic and strength training exercises (G. A. Davies, Wolfe, Mottola, & MacKinnon, 2003; U.S. Department of Health and Human Services, 2008). Although exercise has the potential to be an important behavioral strategy to achieve a healthy pregnancy, several barriers prevail. A recent study found that only 23% of pregnant women were meeting physical activity guidelines (Gaston & Vamos, 2013). It has also been consistently reported that women tend to decrease their level of physical activity when they become pregnant, which

continues as the pregnancy progresses (Borodulin, Evenson, & Herring, 2009; Duncombe, Wertheim, Skouteris, Paxton, & Kelly, 2009; Gaston & Cramp, 2011; Hegaard et al., 2011; Ning et al., 2003; Poudevigne & O'Connor, 2006) and may persist beyond the postpartum period (Pereira et al., 2007; Smith et al., 1994). During pregnancy, women may have misconceptions about the benefits of physical activity because the information they receive are from multiple sources—including health-care providers, printed materials, family, friends, and the Internet—which may vary in consistency and accuracy (Clarke & Gross, 2004).

Pregnancy has been described as a “teachable moment” for promoting a healthy lifestyle because women are concerned about the health of their unborn baby and are motivated to return to their pre-pregnancy weight (Phelan, 2010). In the last few decades, there has been a growing interest in the need to promote emotional wellness and healthy behaviors in women during the perinatal period. Despite these efforts, there remains a need for more educational and informational support for women both antenatally and postnatally. Given the reality of the current health-care system in terms of limited time and resources, women are increasingly turning to the Internet as a major tool for information during pregnancy (Lagan, Sinclair, & Kernohan, 2010; Larsson, 2009). Providing health information via the Internet can be advantageous because it is a low-cost and easily accessible method of delivering information and tools to promote mental health and healthy behaviors tailored to women during this period. Studies have shown that most pregnant women (84%–94%) currently use the Internet to obtain pregnancy-related health information (Huberty, Dinkel, Beets, & Coleman, 2013; Larsson, 2009). Although increased access to health information via the Internet can be helpful, the quality of information retrieved varies considerably and is often incomplete (Ordolis, 2009). A recent Canadian study examined the information available to Canadian women through popular pregnancy information sources (i.e., websites and parenting magazines) and concluded that very little information on mental health issues and treatment options during pregnancy, particularly nonpharmacological options, is currently available (Ordolis, 2009).

In nonpregnant populations, studies are emerging showing the benefits of Internet-delivered

interventions to alleviate depression (Foroushani, Schneider, & Assareh, 2011; Griffiths, Farrer, & Christensen, 2010), increase physical activity (C. A. Davies, Spence, Vandelanotte, Caperchione, & Mummery, 2012), and promote healthy eating and weight (Coons et al., 2012). By comparison, there has been little research directed towards developing web-based interventions to promote mental health and healthy behaviors for women during the perinatal period. Although a few studies have evaluated web-based interventions to target postpartum depression (Danaher et al., 2013; O'Mahen et al., 2013; Sheeber et al., 2012), to our knowledge, none have been designed to increase physical activity or healthy weight gain during pregnancy. In preparation for developing an acceptable and feasible evidence-based website (<http://OWNParents.com>) to enhance emotional wellness and a healthy lifestyle for women during the perinatal period, an online needs assessment survey was conducted. This study sought to determine (a) barriers to seeking help for emotional wellness and healthy behaviors, (b) women's informational needs related to specific topics in the areas of perinatal mental health and healthy behaviors, and (c) preferred sources to obtain information related to each of these topics.

METHODS

Participants

Seventy-four women were recruited by research staff or through study fliers in the waiting rooms at the offices of obstetricians/gynecologists affiliated with the McGill University Health Centre (MUHC), the Jewish General Hospital, and St. Mary's Hospital in the Montreal area, as well as local prenatal classes. Eligibility criteria included the following: able to understand English or French, currently pregnant (between 13–39 weeks' gestation) or birthed in the last 2 months, and has Internet access.

The study protocol was approved by the McGill University Faculty of Medicine Institutional Review Board and the research ethics committees of the participating institutions (MUHC, Jewish General Hospital, and St. Mary's Hospital). All participants provided informed consent.

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Procedure

All women indicating an interest to participate in the study were e-mailed a secure website address (a separate link for each participant) to access the online survey. The survey was accessible through FluidSurveys (<http://www.fluidsurveys.com>) and was password protected. Upon entering the login identifier number, participants viewed the cover page with an online informed consent page describing the survey with an option of consenting or declining to continue with the survey. Participants were then presented with a series of questions. Women could exit the survey at any time. Upon completion of the online survey, women received a \$10 gift card (i.e., <http://www.amazon.ca>) to compensate them for their time.

Measures

The Needs Assessment Survey inquired about demographic information and asked women to rate the importance and amount of information related to specific psychosocial aspects (i.e., depressed mood, stress, strategies to optimize wellness) and healthy lifestyle behaviors (i.e., sleep, physical activity, nutrition) they would like to access through a web-based site designed for expectant or new parents. Each item was rated on a 5-point Likert-type scale, with higher scores reflecting greater importance and need for information. The survey also inquired about barriers to seeking help for emotional wellness and barriers to engaging in healthy behaviors, with each item rated on a 1 (*not a barrier*) to 5 (*very much a barrier*) scale. Women were also queried on their preferred modalities for receiving information on these topics. The topics and tools included in the survey were identified from the existing qualitative (Deave & Johnson, 2008) and quantitative literature (Cramp & Bray, 2009; Hume et al., 2010; Papadakos et al., 2012; Vonderheid, Norr, & Handler, 2007), including our own studies (Da Costa & Ireland, 2013; Verreault et al., 2012; Verreault et al., 2014), as well as the clinical experience and expertise of our team.

Depression was assessed using the Patient Health Questionnaire-2 (PHQ-2). The PHQ-2 consists of two of the nine items from PHQ-9; these include the frequency of depressed mood over the previous 2 weeks (Kroenke, Spitzer, & Williams, 2003). This scale is rated from 0 to 3, where 0 (*not at all*) and 3 (*nearly every day*). The validity of this 2-item scale has been verified and it is considered a useful tool (Kroenke et al., 2003).

The 4-item Perceived Stress Scale (PSS-4) was used to assess maternal perceived stress associated with daily life situations. The reliability and validity of the PSS-4 has been established (Karam et al., 2012) during the perinatal period. PSS-4 scores are obtained by reverse coding the positive items and then summing across all four items. Higher scores reflect higher degrees of perceived stress.

Fear of childbirth was assessed with the questions developed by Nilsson, Lundgren, Karlström, and Hildingsson (2012), which asks “To what extent do you experience worries and fears related to your upcoming delivery? If you have already given birth, think back to your recent birth experience” on a 4-point rating scale ranging from 1 (*not at all*) to 4 (*very much*). In the analysis, this variable was dichotomized into “no fear of childbirth” (combining *not at all* and *somewhat*) and “fear of childbirth” (combining a *great deal* and *very much*).

Parental confidence was assessed on a 5-point scale from 1 (*never*) to 5 (*very often*) in response to the statement “I am confident that I have the skills needed to be a good parent.” Demographics (i.e., age, marital status, ethnicity, education) were also collected, as were self-reported pre-pregnancy weight, current weight and height to calculate pre-pregnancy body mass index (BMI; weight in kilograms divided by the square of height in meters), and current BMI. In the subgroup of women who were pregnant at the time of completing the survey, GWG was calculated by subtracting pre-pregnancy weight from current weight.

Analysis

The statistical analyses were performed using the statistical software IBM SPSS Version 20. The survey data were transferred from FluidSurveys to SPSS. Descriptive statistics, including means, medians, and standard deviations, were calculated for all the continuous variables and percentage for categorical variables.

RESULTS

Characteristics of Study Participants

Of the 141 eligible women who were approached for this study during the 7-week recruitment period, 122 agreed to be e-mailed a link to the online survey and 74 completed the survey (60.7% participation rate). As shown in Table 1, the mean age of our sample was 34.0 years (± 4.2), with most women (77.2%) in the 30- to 39-year-old age range. Most (77.7%) had

TABLE 1
Characteristics of Study Participants

Age (years)	34.9 (4.2)
Education: % (n)	
University degree	77.1 (57)
Ethnicity: % (n)	
Asian	20.3 (15)
Black	8.1 (6)
White	67.6 (50)
Other	4.1 (3)
Employment status: % (n)	
Working	55.5 (41)
BMI (kg/m ²): % (n)	
<18.5	5.4 (4)
18.5–25	63.5 (47)
>25	31.8 (23)
Pregnancy status: % (n)	
Currently pregnant	87.8 (65)
Recently birthed	12.2 (9)
Parity—primiparous: % (n)	23.0 (17)
Psychosocial/behavioral	
PHQ-2	1.2 (1.3)
PSS-4: <i>M</i> (<i>SD</i>)	5.1 (3.1)
Childbirth fear: % (n)	31.1 (23)
Parental confidence: <i>M</i> (<i>SD</i>)	4.2 (0.7)

Note. BMI = body mass index; PHQ-2 = Patient Health Questionnaire-2; PSS-4 = 4-item Perceived Stress Scale.

a university degree, with only 8.1% having a high school diploma or less. Approximately 67.6% of the women were White; 55.5% were employed, whereas 23% were on maternity/preventative leave. Most of the women completing the survey were pregnant (87.8%; $n = 65$), and 14.9% ($n = 9$) had recently birthed. Of those who were pregnant, 35.4% were in their second trimester and the remaining were in their third trimester.

All the women had access to the Internet with most accessing it from home (98.6%). On average, women reported spending 3.9 hours per week on the Internet to obtain information about pregnancy and 2.1 hours a week to search for information on parenting, with 13.6% rating the information as not at all helpful, 39.2% reporting it as somewhat helpful, and 47.3% indicated the information was very helpful in terms of easing their anxieties and improving emotional wellness.

Psychological Well-Being

The mean score on the PHQ-2 was 1.2 (± 1.3), with 13.5% scoring in the depressed range (score ≥ 3). The mean PSS-4 score was 5.1 (± 3.1), with 28.4% of women scoring in the top quartile (score ≥ 7) on this scale. Fear of childbirth was reported by 31.1%

of the sample. The mean score on parental confidence was 4.2 (± 0.7). Most women reported that their doctor had not discussed emotional and mood changes during pregnancy (81.1%) or the importance of stress management (85.1%).

Healthy Behaviors

Overall, 20.3% of the women reported engaging in at least 120 minutes of exercise a week, whereas 41.9% reported that they were not engaging in any exercise. Roughly, one in two women (55.4%) reported that their doctor had not discussed regular physical activity/exercise during their pregnancy. Thirty-two percent ($n = 23$) of our sample reported a pre-pregnancy BMI that classified them as overweight or obese (BMI >25 kg/m²). Among the women who were pregnant when completing this survey, 53.8% were exceeding the upper limit of their recommended GWG range, as defined by current guidelines (Rasmussen & Yaktine, 2009) based on their pre-pregnancy BMI. There were 67.6% of the women who reported that their doctor had not discussed healthy weight gain goals with them during their pregnancy, and 54.1% had not discussed healthy eating/nutrition during pregnancy.

Barriers to Emotional Wellness and Healthy Behaviors

The most frequently endorsed barriers (Table 2) to seeking help to improve emotional wellness during pregnancy or the postpartum period were lack of resources available in the health-care system (75.7%), no time to seek help/assistance (61.6%), financial costs associated with services (60.9%), and feeling that one should be able to do it on one's own (50%). Feeling tired (90.5%), lack of time (79.7%), having young children/family needs (78.4%), the weather (e.g., too hot, wet, or cold; 78.4%), and work (60.9%) were the top five most commonly reported barriers to exercising during pregnancy. Just more than half the women feared injury/harm to the unborn baby during physical activity (51.3%), whereas 31.1% feared injury/harm to themselves. The most frequently endorsed barriers to healthy eating during pregnancy and childbirth were related to “too much effort” (48.6%), “work responsibilities” (28.4%), and “low-fat foods are unappetizing” (27.1%).

Information Needs and Preferred Sources

As shown in Table 3, information topics most highly rated in terms of level of importance for a website

TABLE 2
Barriers to Emotional Wellness and Healthy Behaviors
During Pregnancy and Following Childbirth

Emotional Wellness Barriers	%
Lack of resources available in the health-care system	75.7
No time to seek help/assistance	61.6
Financial costs associated with services	60.9
Feeling that one should be able to do it on one's own	50.0
Reluctance to talk to others about your moods or anxieties	39.2
Reluctance from family or friends to talk about emotional aspects of pregnancy/postpartum	39.2
Fear that others will judge you	28.5
Physical Activity Barriers	
Feeling tired	90.5
Lack of time	79.7
Young children or family needs	78.4
The weather (e.g., too hot, wet, or cold)	78.4
Work	60.9
Fear of injury/harm to unborn baby	51.3
Cost	48.6
Lack of accessibility (distance, availability, hours open)	40.6
Fear of injury/harm to self	31.1
Lack of bike paths, parks, or sidewalks	24.4
Healthy Eating Barriers	
Too much effort	48.6
Work	28.4
Low-fat foods are unappetizing.	27.1
Must please my family	21.7
Don't want to change my eating habits	20.3
Nutrition is too confusing for me.	14.9

Note. Percentage rating ≥ 3 for each barrier statement (1 = *not a barrier*, 5 = *very much a barrier*).

to enhance emotional wellness and healthy behaviors during pregnancy and childbirth (and amount of detailed information) were related to healthy diet choices and weight management (72.9%–83.7%), followed by exercise-related information (71.6%–79.7%). Information pertaining to these behavioral topics was rated as more important compared to psychosocial topics including depression, stress, and anxiety (24.3%–66.2%). The questions receiving the highest importance ratings were weight loss following childbirth (83.7%), exercise recommendations during pregnancy/postpartum (79.7%), dealing with fatigue (77.1%), tips for weight loss following childbirth (77%), ways to stay motivated to exercise regularly after giving birth (76.7%), and tools to help manage sleep problems (74.3%). The top three questions within the psychosocial domain with the highest ratings regarding importance of information were tips for getting help from your support

system (66.2%), information about depression during pregnancy/postpartum (63.5%), and strategies to improve depressed mood (60.8%).

Preferred Sources and Perceived Helpfulness

When asked their preferred source of help or advice related to maintaining healthy lifestyle behaviors such as regular physical activity/exercise and healthy eating during pregnancy and the postpartum, the top three sources were a program or advice provided by the Internet (73%), advice from a doctor or other health-care professional (62.2%), and a booklet (52.7%). The top three preferred sources of help or advice related to managing stress and optimizing mood during pregnancy and the postpartum were advice from a doctor or other health professional (78.4%), a program or advice provided by the Internet (64.9%), and a booklet (43.2%).

As shown in Table 4, women reported feeling most confidence in the following sources as being helpful to improve their mood and anxieties during pregnancy: family (71.7%), friends (64.8%), and the Internet (58.1%). Far fewer women reported confidence in complementary/alternative medicine (13.5%) and antidepressants in terms of their helpfulness to improve mood and anxieties during pregnancy.

DISCUSSION

Women spend a considerable amount of time (4–6 hours) on the Internet during pregnancy and the postpartum period to search for information on pregnancy and parenting. The results of a recent Internet tracking study reported that Canadians who use the Internet are now spending more than 18 hours a week online (Ipsos, 2010). Although previous studies have reported on the frequency of Internet use for information seeking related to pregnancy and parenting (Declercq, Sakala, Corry, & Applebaum, 2008; Wen, Rissel, Baur, Lee, & Simpson, 2011), this is the first study to document hours per week. The high use of the Internet as a resource for health-related information during pregnancy and the postpartum is consistent with findings from the general population (Pew Internet, 2013). Our findings support the feasibility of using web-based educational strategies to reach large numbers of women during the perinatal period.

Consistent with other studies, we found lack of resources available in the health-care system, lack of time, and financial costs as common barriers to

TABLE 3

The Reported Importance of Information Topics and Reported Helpfulness Regarding the Amount of Information Considered Helpful

	Importance of Information ^a	Amount of Information ^b
	%	%
Information to help you make healthy food choices during pregnancy	83.7	74.0
Exercise recommendations during pregnancy/postpartum	79.7	71.2
Dealing with fatigue	77.1	68.9
Tips for weight loss following childbirth	77.0	77.0
Ways to stay motivated to exercise regularly after you have given birth	76.7	77.0
Tools to help manage sleep problems	74.3	74.3
Tips for gaining a healthy amount of weight during pregnancy	72.9	66.2
Ways to stay motivated to exercise regularly during pregnancy	71.6	67.2
Tips for getting help from your support system	66.2	56.8
Information about depression during pregnancy/postpartum	63.5	60.8
Strategies to improve depressed mood	60.8	60.8
Stress management tools	60.3	50.0
Tools to decrease childbirth anxiety	56.7	59.5
Access to psychosocial resources	55.4	54.8
Information about changes in marital relationship during pregnancy/postpartum	52.7	54.0
Tests to measure your mood/stress levels	50.0	48.7
Chat rooms/social networking with other pregnant women or moms who have recently given birth	47.3	48.7
Information about taking antidepressants during pregnancy or following childbirth	24.3	29.7

^aPercentage rating ≥ 4 for importance of information topics (1 = *not at all important*, 5 = *very important*).

^bPercentage rating ≥ 4 for amount of information needed (1 = *none*, 5 = *detailed*).

seeking help to improve emotional wellness during pregnancy (Goodman, 2009; Kopelman et al., 2008). The top barriers to exercising during pregnancy were fatigue, lack of time, having young children/family needs, and the weather. Previous studies with pregnant (Cioffi et al., 2010; Cramp & Bray, 2009; Goodrich, Cregger, Wilcox, & Liu, 2013; Hegaard, Kjaergaard, Damm, Petersson, & Dykes, 2010; Marquez et al., 2009) and postpartum women (Cramp & Bray, 2011; Fahrenwald & Walker, 2003) have also found fatigue- and time-related factors to be major barriers to physical activity during this period. Barriers to healthy eating during pregnancy have received little research attention. Compared to emotional wellness and physical activity, we found women were less likely to strongly endorse barriers related to healthy eating during pregnancy. Time (too much effort) was the most frequently endorsed barrier to healthy eating during pregnancy and following childbirth. Collectively, these findings highlight the importance of identifying personal barriers and using evidence-based strategies to help women overcome barriers to emotional wellness and healthy behaviors during the perinatal period as part of routine prenatal care.

Women rated most highly the need for web-based information related to healthy diet choices and weight management (72.9%–83.7%), followed by exercise-related information (71.6%–79.7%). Given that most women do not recall these topics being discussed during routine perinatal visits, the high proportion of women gaining in excess of the recommended GWG and the low rate of leisure time physical activity during pregnancy, web-delivered information may be a useful approach to educate and encourage women to engage in these healthy behaviors during the pregnancy and the postpartum period.

Despite efforts to increase awareness related to the importance of optimizing emotional wellness during pregnancy and recommendations for routine psychosocial assessment (American College of Obstetricians and Gynecologists, 2006; Reid et al., 1998), most women reported that their doctors had not discussed topics related to emotional and mood changes during pregnancy or stress management.

The top barriers to exercising during pregnancy were fatigue, lack of time, having young children/family needs, and the weather.

TABLE 4
The Reported Confidence in Helpfulness of the Following Sources to Help Improve Mood and/or Anxieties During Pregnancy

Confidence in Sources to Help in Improving Mood and/or Anxieties	%
Family	71.7
Friends	64.8
Internet	58.1
Obstetrician	50.0
Books/printed materials	50.0
Nurse	37.8
Psychologist	31.1
Midwife	29.8
Complementary/alternative medicine	13.5
Antidepressants	5.5

Note. Percentage rating ≥ 4 for perceived helpfulness of sources in improving mood and/or anxieties during pregnancy (1 = *not at all helpful*, 5 = *very helpful*).

The need for web-based information and strategies to deal with psychosocial topics including depression, stress, anxiety, and marital relationship changes were rated as important but less so compared to healthy behaviors, fatigue, and sleep. Although this may indicate less of a need for web-based information on these topics compared to lifestyle domains, it may also reflect stigma with endorsing needs related to these psychosocial aspects.

Consistent with other studies, “their doctor” was rated as the top preferred source of receiving information about emotional wellness during the perinatal period and the second preferred source for information for healthy behaviors. Health-care providers as preferred sources of health information during the perinatal period has also been found in previous studies (de Jersey, Nicholson, Callaway, & Daniels, 2013; Plutzer & Keirse, 2012). This finding has important implications given that many women reported that despite their need for more information on these topics and preference for information to come from their health-care provider, most reported that these topics to date had not been discussed with their doctor. These results are consistent with other studies, which have also found

that discussions related to emotional well-being, exercise and healthy eating, and weight gain goals are not routinely discussed during prenatal patient–doctor visits (Ferrari, Siega-Riz, Evenson, Moos, & Carrier, 2013; McCauley, Elsom, Muir-Cochrane, & Lyneham, 2011; McDonald et al., 2011). Providing emotional and lifestyle behavioral information as part of routine prenatal care is important because these discussions can translate into increased knowledge, lifestyle modification, and reduced emotional distress (Roter et al., 1995; Stotland et al., 2005; Vonderheid et al., 2007). Although time constraints are a likely factor contributing to this gap in information provision, physicians may also underestimate the needs of pregnant women for information on these topics, overestimate the amount of information they give or that women have, or lack the training needed to discuss these topics.

The Internet was reported as a preferred source of information for nutritional and exercise information and the second preferred source for emotional aspects. Interestingly, women rated their confidence in the Internet as a helpful resource to improve mood and/or anxiety during pregnancy higher than health-care professionals. These findings suggest the need and feasibility of providing evidence-based information to promote healthy behaviors and emotional wellness during the perinatal period via the web as part of routine prenatal care. Obtaining endorsement and support from health-care providers for such web-based initiatives may enhance the credibility, uptake, and usability of Internet-delivered information. A recent study by Lagan, Sinclair, and Kernohan (2010) found that most women (89.9%) felt that health professionals should suggest suitable Internet sites for women to search pregnancy-related information. Although there is some evidence to suggest that Internet-delivered information and interventions with pregnant women lead to discussions with health-care providers (Lagan et al., 2010) influence decision making (Lagan et al., 2010; Lagan, Sinclair, & Kernohan, 2011), reduce psychological distress, and increase adherence to healthy behaviors (Huberty et al., 2013; O’Mahen et al., 2013; Rowe & Fisher, 2010), more research is needed to identify the impact of this delivery mode on increasing women’s knowledge, experiences, and behaviors during the perinatal period.

The following limitations should be noted. Our survey was distributed to women who had Internet access and may not reflect the needs of women who

Health-care providers should become familiar with high-quality evidence-based Internet sites and provide recommendations to supplement and reinforce their advice as part of routine prenatal care.

are not online. However, this is likely to be a small minority given that 83% of Canadians are Internet users, with the figures even higher for women in this age group (Internet World Stats, 2012). Our sample size was relatively small and was composed mostly of White, highly educated, and somewhat older women than the typical perinatal–maternal population. Thus, our sample cannot be considered representative of all women in the perinatal period, limiting the generalizability of our findings. Although our survey was offered in both English and French languages, the results do not reflect the needs of women who are not fluent in these languages.

Implications for Practice

Our findings indicate that women during the perinatal period want Internet-delivered information related to healthy eating and weight, physical activity, and emotional aspects. We have identified information topics that women find important, which can guide the development of credible, evidence-based health promotion Internet sites tailored to women during the perinatal period. Web-based resources can serve as a powerful low-cost educational tool to support and reinforce the health-promotion advice received from their health-care providers because women can have access immediately and continuously. Health-care providers should become familiar with high-quality evidence-based Internet sites and provide recommendations to supplement and reinforce their advice as part of routine prenatal care.

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