Pregnancy Planning Guide

Evidence-based information for prospective parents

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ABSTRACT

PROBLEM BEING ADDRESSED Pregnancy planning is inadequately supported by existing information and materials.

OBJECTIVE OF PROGRAM To design and pilot-test a new way to help women plan their pregnancies and incorporate important evidence-based information directly into their planning. To evaluate the content of the new Pregnancy Planning Guide and women's satisfaction with it.

MAIN COMPONENTS OF PROGRAM The Pregnancy Planning Guide combines a rotating gestational wheel surrounded by information about time-specific events in pregnancy with evidence-based information about common concerns during pregnancy. The guide is designed to be used as a quick reference for women and their partners; it highlights issues to be discussed at greater length with maternity caregivers. The guide was first evaluated for content validity by 27 experienced maternity caregivers and then revised. The revised version was given to 108 women of childbearing age along with a survey to assess their satisfaction with the guide and the extent to which they thought it was useful.

CONCLUSION The Pregnancy Planning Guide is useful for women planning pregnancy. It should promote increased use of folic acid in the periconception period and a greater understanding of when birth is likely to occur.

RÉSUMÉ

QUESTION À L'ÉTUDE Absence d'information et de documentation adéquates pour les couples désireux de planifier les grossesses.

OBJECTIF DU PROGRAMME Concevoir un nouveau guide de planification des grossesses fondé sur des données probantes à l'intention des couples désireux de planifier leurs grossesses. Le tester auprès de cette clientèle. Évaluer son contenu et le degré de satisfaction des utilisateurs.

PRINCIPAUX ÉLÉMENTS DU PROGRAMME Le guide de planification des grossesses est constitué d'un disque rotatif central (calendrier de grossesse) autour duquel sont indiqués les principaux événements qui surviennent durant la grossesse ainsi que certaines recommandations et informations fondés sur des données scientifiques à propos des questions les plus fréquemment soulevées durant la grossesse. Le guide se veut une source d'informations rapidement accessibles; il met l'emphase sur les sujets qui doivent être discutés plus à fond avec les professionnels de la santé. Après que la validité de son contenu ait été vérifiée par 27 professionnels expérimentés du milieu obstétrical, le guide a été révisé. La version révisée a été soumise à 108 femmes en âge d'avoir des enfants, en même temps qu'un questionnaire pour connaître leur degré de satisfaction vis-à-vis cet outil et leur opinion sur son utilité.

CONCLUSION Le guide de planification des grossesses est utile aux couples qui désirent planifier leur grossesses. Il est susceptible de promouvoir la prise d'acide folique durant la période entourant la conception et permettre de mieux prévoir le moment de l'accouchement.

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Gestational calendar wheels have traditionally been used by maternity caregivers to predict likely due dates and calculate patients' current gestational stage. The idea for the Pregnancy Planning Guide arose in 1999 from evaluation of the Maternity Care Calendar and Guidelines.[1,2] The Calendar was developed to assist maternity caregivers in following the course of each patient's pregnancy using a modified gestational wheel and an evidence-based checklist summarizing recommended interventions for prenatal care.

During evaluation of the Calendar, pregnant women were asked how they thought it could be improved. These women repeatedly suggested that they would find a similar rotational calendar useful for planning pregnancy. As a result, we adapted the format of the Calendar to one more appropriate for planning pregnancy. Searches of print material and the Internet failed to turn up a pregnancy planner that combined evidence-based information with a visually appealing and concise way of planning and following pregnancies.

Need for information

Commonly cited determinants of maternal satisfaction during pregnancy include communication with caregivers, a sense of being in control, participation in decision making, and being able to get information.[3-5] Studies have shown that practitioners sometimes underestimate women's desire for prenatal and postnatal information and their need for control and confidence in adjusting to the maternal role.[6] If women perceive they are respected by their caregivers, they are more likely to feel positive about pregnancy.[7] Our objective in creating the Pregnancy Planning Guide was to increase understanding between women and their maternity caregivers and to enhance women's perception of respect, and thus control, during pregnancy, birth, and the postnatal period.

Known deficits in prenatal information

Many areas in which there are known deficits in prenatal information are highlighted on the Pregnancy Planning Guide.

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Optimal timing of conception. Information about the timing of conception itself could be helpful to many couples trying to get pregnant. A 1997 study in New Zealand demonstrated that 46% of patients attending a tertiary referral infertility centre after attempting conception for at least 2 years had little understanding of the nature and implications of fertility symptoms.[8] Most pregnancies can be attributed to intercourse during a 6-day period ending on the day of ovulation.[9]

Folic acid. Periconceptional intake of folic acid can reduce the risk of neural tube defects,[10-12] yet reported rates of optimal supplementation remain low,[12-18] ranging from 0 in South America[19] to 52% in the Netherlands.[20] In particular, these studies show that few women take folic acid in the 4 weeks before conception.

Smoking cessation. Evidence suggests that, although most women are aware of the danger of smoking during pregnancy, fewer than 25% of women who smoke actually stop smoking during pregnancy.[21] Research shows that simple advice appears to have little effect on smoking cessation rates. Intensive interventions focused on self-help and behavioural strategies appear to be most effective.[22]

Triple marker screening. Counseling on maternal serum triple marker screening is currently recommended in most clinical practice guidelines.[2,23-26] Screening is another area that continues to confuse pregnant women. Women want personalized, accurate, unbiased information as early as possible in pregnancy so they can make informed choices about maternal serum screening.[27] Misinterpretation of both positive and negative test results can lead to either inappropriate anxiety or false reassurance.[28-30] Studies have shown that not all prenatal caregivers routinely offer the triple test to pregnant women.[31,32]

Pregnancy Planning Guide

The guide (**Figure 1**) is intended to help women plan their pregnancies and to reinforce evidence-based behaviour change that will lead to improved care during pregnancy and better birth outcomes. The original calendar wheel has been augmented with time-specific information about many important events during pregnancy. On the reverse side of the guide, common concerns during pregnancy are addressed in question-and-answer format. We hope this information will facilitate communication

between women and their maternity caregivers and enhance women's sense of satisfaction during and after pregnancy and birth.

On the wheel side (**Figure 1A**), the date of the first day of the last menstrual period is marked, as is the time during which conception is most likely to occur, given a cycle of roughly 28 days. This pictorial representation of the "fertile time" of the cycle could help clarify questions about timing of intercourse to increase chances of conception. Specific recommendations for behaviour change are also made, including taking folic acid supplements before conception and until 12 weeks' gestation.[24-26]

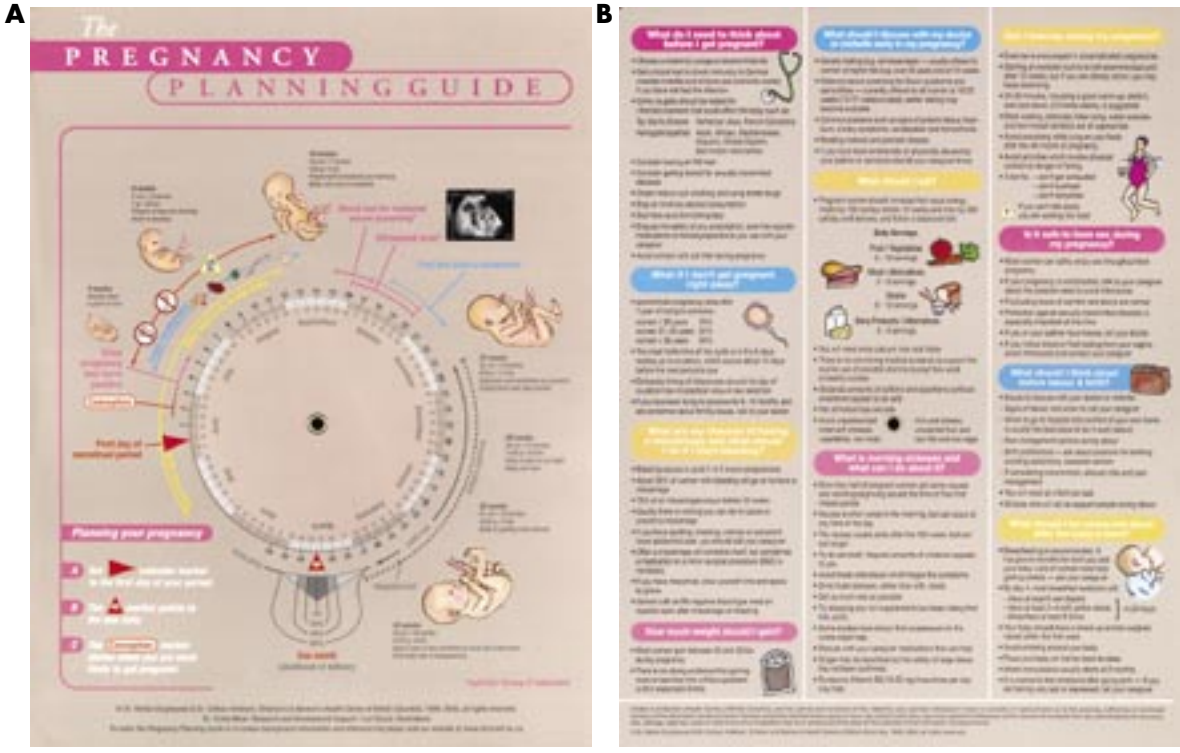
The Pregnancy Planning Guide is designed to be used by women before conception and, as such, might be ideal for facilitating use of periconceptional folic acid. The critical period of organogenesis (6 to 10 weeks' gestation or 4 to 8 weeks after conception)[33] is highlighted with recommendations to avoid smoking and drinking alcohol and to take care with medications throughout pregnancy.[24-26] These behaviour modifications are reinforced on the reverse side of the guide (**Figure 1B**) as issues to consider before conception.

Fetal development, including general estimates of weight, length, sensorimotor function, and morphology[33-36] are described at intervals around the wheel to strengthen awareness of the growing and maturing fetus and promote optimal health during pregnancy. The wheel format facilitates depiction of time-sensitive tests and interventions, such as folic acid supplementation, screening ultrasonography, maternal serum triple marker screening, prenatal classes, and a hospital visit. It provides an individualized, "at-a-glance" plan for each woman's pregnancy, as well as focal points for discussion at prenatal visits.

The "due date" of delivery has been de-emphasized on the guide in favour of the "due month." The likely time for delivery if a woman has spontaneous onset of labour is presented graphically on the calendar.[1] We hope this will encourage women to plan for their deliveries more realistically and effectively. It also encourages women to focus more on the date on which they might be induced for being overdue rather than on the due date and avoids the frequent misconception that if they are one or two days after the due date they are already overdue.

Articles retrieved from searches of MEDLINE and the Cochrane Database, and information from the Canadian Task Force on the Periodic Health Examination,[26] the

Figure 1. Pregnancy Planning Guide: *A) Wheel side; B) Text side.*



United States Preventive Services Task Force,[25] and major obstetric texts[33-36] formed the basis for the comments on both sides of the guide. A complete list of the references is available on our website.

Evaluation

Evaluation of the Pregnancy Planning Guide was carried out in two phases. In phase 1, the first draft of the guide was evaluated for content validity. It was distributed to 27 maternity caregivers, including 16 family physicians with special interest in obstetrics, three obstetricians, five midwives, one prenatal educator, one resident, and one research scientist at the British Columbia Research Institute for Children's and Women's Health. These caregivers were asked to review the guide, complete a survey documenting inaccuracies or omissions, and make suggestions for improving the guide. Their suggestions were incorporated into the revised version.

In phase 2, an anonymous, self-administered survey was given to both pregnant and non-pregnant women of childbearing age in several Vancouver area family practice offices, community health clinics, and prenatal classes. We attempted to include participants from a range of socioeconomic strata. In clinic waiting rooms, each participant was approached individually and given both the Pregnancy Planning Guide and the patient survey. Women attending prenatal classes were approached as a group. Women were excluded from the study if they had difficulty understanding English or were likely to be distressed by the study, such as in the event of a recent miscarriage.

The initial part of the survey required participants to rate the apparent usefulness of each component of the guide on a scale of 0 to 4, with 0 being "not at all useful" and 4 being "very useful." Further questions invited participants to comment on confusing or unclear parts of the guide and the best and worst features of the guide, and to suggest other topics for discussion. Participants were also asked to describe any changes in behaviour and new issues they would discuss with their caregivers as a result of seeing the guide.

Demographic characteristics of the study population including age, pregnancy status, gravidity, education level, and annual household income, were also collected. Survey results were analyzed using EpiInfo 6. The Kruskal-Wallis test for nonparametric data was used to determine whether there were any associations. Literacy testing was carried out using the Gunning Fog Index for the question-and-answer side of the guide.[37]

Findings

Of 132 women approached in phase 2 of the study, 108 consented to participate. Nonrespondents were not formally questioned about their reasons for not taking part in the survey, but the most frequent deterrents mentioned were lack of time and personal factors. Descriptive statistics indicate that the study population was mainly composed of women aged 20 to 29 years, who had relatively high income and educational levels (**Table 1**). Most of the women were not pregnant at the time of the survey; 65.1% of respondents had never given birth before.

Table 2 shows the mean usefulness ratings of all participants. There was no correlation between perceived overall usefulness of the guide and clinic surveyed or women's characteristics, including socioeconomic status and level of education.

The most popular aspects of the guide were its simplicity and concise format (mentioned by 32% of respondents), the "wheel" (31%), and the representations of fetal development (18%). About two thirds (69%) of respondents said the guide was clear and easy to understand, but 14% indicated that using the wheel for dating or planning purposes was somewhat confusing, particularly at first glance. Having a "reading list" for further reference at the bottom of the guide was the most common suggestion for additional information (4%); 44% of respondents could think of nothing to add.

Almost one third (29%) of respondents said they would change their behaviour as a result of reading the guide. About 10% of the total sample said they would start folic acid earlier, 7% said they would eat differently, 5% said they would obtain help to quit smoking or using other drugs or to stop drinking alcohol, and 4% each said they would plan more carefully for pregnancy or would exercise more.

The literacy test showed that the question-and-answer side of the guide was suitable for grade 9 level readers.

Discussion

A limited evaluation suggests that the Pregnancy Planning Guide is useful for women planning pregnancies. All sections of the guide rated between 3 and 4 for perceived usefulness, except the part about fertility rates. Lower interest in this section might reflect the greater proportion of women younger than 30 (50.6%) in the sample. It is notable that the wheel side of the guide, with information about important pregnancy landmarks and growth of the baby, rated higher overall than the text side. An individualized

Table 1. Demographic characteristics of women surveyed

CHARACTERISTICS	N (%)
AGE	
• ≤19	5 (4.6)
• 20-29	57 (52.8)
• 30-39	34 (31.5)
• ≥40	10 (9.3)
• Nonrespondents	2 (1.9)
INCOME	
• <$20 000	11 (10.2)
• $20 000-$34 999	18 (16.7)
• $35 000-$50 000	11 (10.2)
• >$50 000	41 (38.0)
• Unknown	25 (23.1)
• Nonrespondents	2 (1.9)
EDUCATION	
• No formal schooling	6 (5.6)
• High school diploma	22 (20.4)
• College or university degree	70 (64.8)
• Other	2 (1.9)
• Unknown	6 (5.6)
• Nonrespondents	2 (1.9)
PREGNANCY STATUS	
• Pregnant	30 (27.8)
• Not pregnant	73 (67.6)
• Unknown	4 (3.7)
• Nonrespondents	1 (0.9)
PREVIOUSLY GIVEN BIRTH	
• Yes	37 (34.3)
• No	69 (63.9)
• Nonrespondents	2 (1.9)
NUMBER OF PREVIOUS BIRTHS	
• 1	21 (19.4)
• 2	8 (7.4)
• 3	3 (2.8)
• 4	3 (2.8)
• 5	2 (1.9)

Table 2. Mean ratings of the usefulness of the Pregnancy Planning Guide: *Rating scale ranged from 0 (not at all useful) to 4 (very useful).*

PART OF GUIDE	MEAN RATING (± SD)
OVERALL USEFULNESS	3.509 (.619)
WHEEL SIDE	
Important pregnancy dates	3.718 (.489)
Information about growth of baby	3.681 (.557)
TEXT SIDE	
What do I need to think about before I get pregnant?	3.360 (.785)
What if I don't get pregnant right away?	2.858 (1.028)
What are my chances of having a miscarriage and what should I do if I start bleeding?	3.394 (.673)
How much weight should I gain?	3.102 (.937)
What should I discuss with my doctor or midwife early in my pregnancy?	3.329 (.752)
What should I eat?	3.370 (.860)
What is morning sickness and what can I do about it?	3.285 (.888)
Can I exercise during my pregnancy?	3.394 (.818)
Is it safe to have sex during my pregnancy?	3.375 (.792)
What should I think about before labour and birth?	3.387 (.788)
What should I be concerned about after the baby is born?	3.402 (.823)

pictorial representation of the timeline of pregnancy appeared to appeal greatly to the women surveyed.

Although fewer than half the respondents thought the guide would affect their behaviour, taking folic acid and limiting smoking and intake of alcohol and illicit and prescription drugs were cited most often as behaviours to change. It appears that the guide stimulated some desire to take action, action that could substantially affect the outcome of pregnancy.

The demographic limitations of the sample are important: 66% had college or university degrees, 38.7% were earning >$50 000 a year. It is encouraging that the women in the sample with lower socioeconomic status and less education seemed to find the guide useful. A larger study concentrating on women in clinics in poorer areas would be helpful to further assess the guide's potential for enhancing pregnant women's satisfaction and obstetric outcomes.

One of the more difficult tasks of producing the guide was deciding what information to include, given the space limitations, the wealth of topics to cover, and the disparities among prenatal care guidelines.[23] Interventions that were based on sound evidence and included in most guidelines were noted, as were common concerns during pregnancy. Pilot surveys of obstetric caregivers and women of childbearing age

helped identify the areas of greatest interest. Issues highlighted in the guide are designed to stimulate discussion between patients and caregivers rather than to serve as complete summaries of each topic.

Because clinical practice guidelines for prenatal care are constantly changing, the Pregnancy Planning Guide will need to be updated periodically (probably every 3 to 5 years). A reference list for the Pregnancy Planning Guide and information about ordering are available at **www.pregnancyplanningguide.com** or **www.bcricwh.bc.ca**.

Conclusion

The Pregnancy Planning Guide is a quick, evidence-based source of information for women and their partners. Pilot testing and surveys of women in various settings revealed that these women perceived the guide as very useful and were satisfied with it.

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Competing interests

*Profits from sales of the Pregnancy Planning Guide will be shared between the Children's and Women's Health Centre of British Columbia, two of the authors (*S.G. *and* C.K.*), and the research fund of the Department of Family Practice at Women's Health Centre of British Columbia and the Department of Family Practice Research at the University of British Columbia.*

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The Pregnancy Planning Guide can be ordered from the Business Development Office, Children's and Women's Health Centre of British Columbia, Room E600H, 4500 Oak St, Vancouver, BC V6H 3N1; fax (604) 875-2410; e-mail **jjay@cw.bc.ca**. *Planning guides cost $6.95 plus shipping and handling. Discounts apply to bulk orders. Cheques should be made payable to BC Research Institute for Children's and Women's Health. Further information is available at* **www.pregnancyplanningguide.com**.

Editor's key points

- The Pregnancy Planning Guide, which was developed for women of childbearing age, resembles the circular gestational calendar used by clinicians. It provides information on the best time for conception; fetal development; symptoms that occur frequently during pregnancy; and preventive interventions, such as taking folic acid supplements, quitting smoking, and having the triple test.
- The guide was pilot-tested among 27 maternity caregivers and revised in light of their suggestions. A revised version was then evaluated by 108 pregnant and non-pregnant women. Preliminary results indicate that they found the guide useful.
- Information about where to order the guide is given in the article.

Points de repère du rédacteur

- Un guide de planification de la grossesse a été développé à l'intention des femmes en âge de procréer. Le guide qui ressemble au calendrier gestationnel circulaire utilisé par les cliniciens inclut, entre autres, des informations sur le moment optimal pour la conception, le développement du fœtus, les symptômes fréquents durant la grossesse et plusieurs interventions à visée préventive telles que la prise d'acide folique, l'abandon du tabac et le triple test.
- Le guide a été testé d'abord auprès de 27 professionnels de la santé faisant de l'obstétrique. Par la suite, une version révisée a été testée par 108 femmes enceintes ou non enceintes. Les données préliminaires indiquent que le guide est perçu comme utile et satisfaisant.
- Les informations pour commander le guide sont données dans l'article.

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