Pilot Evaluation of an Internet-Based Natural Family Planning Education and Service Program

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ABSTRACT

Objective: To evaluate the efficacy, knowledge of fertility, and acceptability of a web-based natural family planning (NFP) education and service program.

Design: A 6-month repeated measure longitudinal evaluation pilot study.

Setting: A university based online website.

Participants: The website was piloted with 468 volunteer women seeking NFP services. Of these participants, 222 used the automatic online fertility charting system to avoid pregnancy. The 222 charting participants had a mean age of 29.9 years (SD = 5.6), 2.2 children (SD = 1.9), 37% were postpartum, and 47% had regular menstrual cycle lengths.

Intervention: Nurse-managed web-based NFP education and service program.

Outcomes: Pregnancies were confirmed by an online self-assessed pregnancy evaluation form. A 10-item fertility quiz and 10-item acceptability survey was administered online.

Results: Among the 222 users avoiding pregnancy, at 6 months of use, there were two correct-use unintended pregnancies that provided a pregnancy rate of 2% and seven total unintended pregnancies providing a typical use pregnancy rate of 7%. Mean knowledge of fertility increased significantly from time of registration (8.96, SD = 1.10) to 1 month of use (9.46, SD = .10), t = 4.60, p < .001. Acceptability increased nonsignificantly from 1 month of use (45.6; SD = 8.98) to 6 months of use (48.4; SD = 8.77).

Conclusion: The nurse-managed online NFP system seems to provide adequate knowledge of fertility and help participants meet pregnancy intentions. Acceptability of such a system of NFP is still in question.


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Only 64,000 to 124,000 couples in the United States currently use modern natural family planning (NFP) methods to avoid pregnancy (Mosher, Martinez, Chandra, Abma, & Wilson, 2004; Mosher & Jones, 2010). Reasons for low usage of NFP include complexity of NFP methods, lack of access to qualified teachers, actual and perceived ineffectiveness, and lack of credibility of the methods among health professionals and the general public (Fehring, 2009; Fehring, Hanson, & Stanford, 2001). Current NFP delivery systems are teacher and user intensive (Arévalo; Barrot, 2008). An online NFP service administered by professional nurse NFP teachers with links to medical consultation is one way to meet the need for easier access to NFP services and to service large areas.

Another need is to simplify the teaching and delivery of NFP services. Patient encounters in health care practice last about 10 to 15 minutes to be cost effective. Current NFP services are education
The Internet is the primary source for women seeking information on fertility.

Past studies have sought to determine the characteristics and use of the Internet by infertile couples (Epstein, Rosenberg, Grant, & Hemenway, 2002; Haagen et al., 2003; Weissman, Gotlieb, Ward, Greenblatt, & Casper, 2000), assess the types of information sought on the Internet by infertile couples (Himmel, Meyer, Kochen, & Michelmann, 2005; Marriott et al., 2008), describe the experience (Malik & Coulson, 2008), and assess the quality of information on infertility websites provide (Epstein & Rosenberg, 2005; Huang, Discepola, Al-Fozan, & Tulandi, 2005; Okamura, Bernstein, & Fidler, 2002; Weiss & Moore, 2003). However, there have been few studies that have investigated the effectiveness of these websites on satisfaction or other outcomes.

One study investigated the effect of providing online access to personal medical records on the empowerment and satisfaction of couples undergoing in vitro fertilization (IVF) treatments (Tull, Verhaak, Robbe, & Kramer, 2007). The researchers compared the outcome of empowerment with a control group of couples who did not have access to their medical records and found there was no difference in empowerment. Other researchers provided an information website on infertility for couples with unexplained infertility (Porter & Bhattacharya, 2008). The intent of the website was to provide information on how to achieve pregnancy. They found that only couples who achieved a pregnancy felt empowered.

Finally, infertility researchers recently sought to develop and test the effectiveness of a brief web-based education and support system for female infertility patients (Cousineau et al., 2008). The researchers found that those women who were exposed to the online Infertility Source program had significant improvement in the area of social concerns related to infertility and felt more informed about medical decisions in which they were involved. This was the first study to demonstrate the efficacy of an online infertility support and educational system. Similar studies are needed to assess the benefits of online charting and information for family planning purposes. The Cousineau et al. study did not have direct access to health professionals (e.g., professional nurses or physicians) to answer questions and concerns related to fertility, forums to share concerns with other couples, or an online fertility monitoring system.

Background

According to the National Center for Health Statistics, 74% of adults in the United States use the Internet and about 64% have accessed the Internet for health information (Cohen & Stussman, 2010). Each month approximately two million more people connect to the Internet (Jain & Barbieri, 2005). Furthermore, women of reproductive age access health information on the Internet more than men (Cohen & Stussman). There are more than one million websites that provide information on fertility. In fact the Internet is the number one source of information for couples with fertility health problems (Kahlah & Mackert, 2009).

Natural Family Planning

Natural family planning is simply the ability to monitor fertility by use of self-detected natural indicators...
of fertility (Fehring, 2004, 2005). Knowledge of the fertile time in the menstrual cycle allows the woman and couple to modify their behavior to either avoid or achieve pregnancy, for example, avoid intercourse during the estimated fertile time to prevent pregnancy and to have intercourse during the fertile phase to become pregnant. There are only 6 days of fertility during the menstrual cycle, the day of ovulation and the 5 days before ovulation (Wilcox, Dunson, & Baird, 2000). In NFP, the couple uses natural indicators of fertility to estimate the beginning, peak, and end of the 6-day fertile phase. The traditional natural indicators to estimate the fertile phase of the menstrual cycle are the estrogenic changes in the cervix and cervical mucus, the post-ovulatory progesterone stimulated rise in resting body temperature, and calendar day estimates. Various individuals (usually physicians) have developed methods of NFP that include one or a combination of natural signs of fertility and instructions as to how to monitor and chart these signs of fertility, how to use these signs to avoid or achieve pregnancy, and how to manage special reproductive circumstances such as postpartum breastfeeding and peri-menopause. Generally, these methods are very effective in helping women/couples to avoid pregnancy with correct use (i.e., a 1%–3% unintended pregnancy rate per 100 women over 12 months of use), but the typical or imperfect use unintended pregnancy rate ranges from 12% to 25% (Trussell, 2004).

Marquette University College of Nursing (MUCN) has been providing professional services in NFP since 1985. In 1999 we developed a new method of NFP that incorporates electronic hormonal fertility monitoring along with other traditional markers of fertility. The electronic hormonal fertility monitor is a handheld device that measures estrogen and luteinizing hormone (LH) in the urine and provides the user with three levels of fertility: low, high, and peak (Fehring, 2005). The monitor was developed to indicate the most fertile days in the menstrual cycle for couples wishing to achieve a pregnancy. However, the information that the monitor provides can be used in reverse along with other markers of fertility, such as the changing patterns of cervical mucus and basal body temperature for those wishing to avoid pregnancy. Our system of NFP includes use of the fertility monitor, a unique fertility charting system, user manual, a slide program for presenting the method in person, and protocols for special circumstances, such as monitoring fertility during breastfeeding, peri-menopause, and post-hormonal contraception. We also developed a unique protocol for monitoring fertility while breastfeeding

**The objective of this pilot study was to determine efficacy, fertility knowledge, and acceptability of a nurse-managed online natural family planning education and support system.**

In 2007 we completed our first prospective efficacy and acceptability study of the Marquette Method of NFP (Fehring, Schneider, Raviele, & Barron, 2007). The 217 couples in this study found the new method to be easy to use and acceptable, and it provided them with confidence in identifying the fertile phase of the menstrual cycle. Since then we have completed a retrospective and comparative efficacy study of the Marquette Method of NFP and found the method to be more effective than traditional single-indicator methods (Fehring, Schneider, & Barron, 2008; Fehring, Schneider, Barron, & Raviele, 2009). However, the professional nurse NFP providers at Marquette can only see in-person couples from a limited geographical area. The Marquette NFP providers receive weekly and daily requests from the lay public and from health professionals for information on NFP, the use of the fertility monitor, and special reproductive protocols. In the past, information on NFP was sent out through e-mail, but this process was rather time-consuming and repetitious. Therefore, a website was developed that has information on NFP, NFP materials, an online fertility charting system, and a process for receiving feedback and consultation that has streamlined the online NFP teaching process.

**Method**

**Design**

This was a 6-month repeated-measure longitudinal evaluation pilot study of the efficacy (for avoiding or achieving pregnancy), knowledge of fertility, and acceptability of a nurse-managed NFP website. Volunteer participants were asked to use and evaluate the website (for the purpose of either achieving or avoiding pregnancy) over a 6-month time period. During the first 6 months the participants had their knowledge of fertility measured at registration and 1 month of use. Acceptability measured at 1, 3, and 6 months of use, and all pregnancies were evaluated as being either intended or unintended. For the purpose of this pilot study, unintended pregnancy rates were carried out to 6 months of use.
Participants
All participants were obtained by one announce-
ment of the NFP website and the pilot study on a
NFP online discussion forum for NFP health profes-
sionals. The participants were not the health
professionals nor were the participants accessed
directly. The health professionals spread the avail-
ability of the website through their own sources,
that is, by e-mails, websites, or in-person to poten-
tial couples. The availability of the website then
spread through online “snowball” means, that is,
from one participant to another or by other partici-
pants posting the availability of the website in blogs
or other websites, such as a breastfeeding support
site. Eligibility to be in the pilot study was that the
female participant wished to use the site to either
achieve or avoid pregnancy or for fertility knowl-
edge. At registration into the website the participants
were automatically asked to sign (i.e., click on a “yes”
response) on an online consent form that requested
that they use the site and charting system and to
provide feedback to the developers. Participants
were not able to use the website charting system
and forums until consent was given. The study
received human subject approval through the Mar-
quette University Office of Research compliance.
The online website is encrypted through the server
system and is accessed only through protected
passwords. The personal information of the partici-
ants and their fertility charts can be accessed only
by the participants (i.e., only their own charts), the
professional nurse NFP teachers, or the designated
graduate research assistant at Marquette University.

Description of Website
The Marquette University College of Nursing NFP
website (http://nfp.marquette.edu) has free informa-
tion on fertility, downloadable paper or digital
charting systems, access to protocols for special cir-
cumstances (e.g., using NFP while breastfeeding),
and instructions for achieving and avoiding preg-
nancy. A unique aspect of the information section of
the website is a one-page simple Quick Start Instruc-
tions that can be read in 5 minutes and allows the
user to begin charting and using a NFP method.
Women who register on the website are able to
access an online electronic charting system, discus-
sion forums, and have consultation from profes-
sional nurse NFP teachers, an obstetrician
gynecologist with expertise in the use of NFP, and a
bioethicist. The online charting system also notifies
the user of possible health problems, including
unusual bleeding, infertility, pregnancy, and cycle
dynamics that are out of the norm. The Marquette
online NFP system is offered in English and Spanish
languages.

The nurses that manage the online program visit
the site everyday to answer questions in the online
forums, to provide one-on-one private consultation
with participants, and to monitor the site for inap-
propriate responses. Forum and private questions
are answered within 24 hours of being posted. The
nurses also notify the website physician consultant
or bioethicist when questions are directed toward
their expertise. The website is periodically updated
by the nurses with research on fertility, suggestions
on how to manage health problems like polycystic
ovarian disease, and how to optimize fertility.

The online charting system has designated sec-
tions for recording the results of either an elec-
tronic hormonal fertility monitor (EHFM) or self-
observed cervical-vaginal mucus or both (as
estimates of the fertile phase of the menstrual cycle)
and provides spaces for recording the results as
either L = low, H = high, or P = peak fertility. The
charting system provides a pop-up window for the
user that illustrates the three fertility levels provided
by the fertility monitor or the cervical-vaginal mu-
cus observations. The charting system also has a
place to record menses on a scale of 1 to 3 with
1 = light, 2 = moderate, and 3 = heavy menstrual
flow and a row for recording acts of intercourse
( = 1). The top of the chart has room for recording
intention of use (to achieve or avoid pregnancy) for
each cycle. The charting system automatically indi-
cates (in light blue) the fertile phase (based on a
built in fertility algorithm) as the user charts. There
is no guessing as to whether the day is either fertile
or not (see Figure 1).

Outcomes
Pregnancy Outcomes. The electronic charting
system automatically notifies the user of the possi-
bility of a pregnancy when the luteal phase of the
charted menstrual cycle goes beyond 19 days. The
charting system will then prompt the user to take a
pregnancy test. The online system also launches a
pregnancy evaluation form that the user is asked
to complete. Two professional nurse NFP teachers
evaluate all pregnancies that occur among the par-
ticipants. The NFP teachers review the charting
system for the days of fertility, the days of recorded
intercourse, and the information on the pregnancy
evaluation form. Each participant was asked to
record on her fertility chart before each new cycle
of charting her intention of either achieving or
avoiding pregnancy. A determination is made if
intercourse occurred during the fertile time as desig-
nated by the online charting system. Each pregnancy
was classified (with agreement of the couple) accord-
ing to the following classification as recommended by Lamprecht and Trussell (1997): (a) pregnancies were classified as intentional only when a couple reports prior to the pregnancy cycle an intention to use the method to become pregnant, (b) all unintentional pregnancies were used in the analysis of pregnancy risk during typical use, and (c) all unintentional pregnancies occurring during cycles in which NFP rules were followed were used in the analysis of pregnancy risk during correct use.

Fertility Knowledge. A 10-item true-false fertility quiz was developed by the professional nurses and physicians who designed the Marquette Method of NFP. The quiz is provided for in-person provision of NFP at the first introductory session on NFP and at the 1 month follow-up. It was originally developed as a teaching tool and a form of assessment. The items include knowledge of life span of egg and sperm, length of the fertile phase, and questions on natural fertility indicators (cervical mucus and basal body temperature) and female reproductive hormones. The internal reliability $\alpha$ of the 10-item quiz for the participants who used the online charting system was .72.

Acceptability. All participants were automatically prompted to complete a 10-item questionnaire on whether the online website was acceptable, easy to use, convenient, and provides clear and objective results. The 10-item survey was a shortened form of an acceptability/ease of use questionnaire developed by Severy for evaluating an EHFM (Severy, 2001; Severy, Robison, Findley-Klein, & McNulty, 2006). The 10 items are ranked on a scale from 1 to 7, with bipolar negative and positive adjectives. The range of scores for the survey is from 10 to 70, with the higher score indicating more acceptability and ease of use. This is the same tool that was used in the prospective efficacy study of the EHFM as an aid to NFP (Fehring, 2008). Internal consistency $\alpha$'s of the modified version from the 2008 study were .83 to .91. For the current study the internal consistency

Figure 1. Example online automatic fertility charting system. Provides system to chart low (L), high (H), or peak (P) fertility readings, intercourse patterns (I), and automatically estimates the fertile window (blue shaded area).
α’s were .85, .89, and .85 at 1, 3, and 6 months, respectively.

Analysis. Information from the data charts, the online acceptability survey, and the pregnancy outcomes were accessed from the study website by graduate research assistants and entered into a statistical program data file. Survival analysis (Kaplan-Meier) was used to determine correct use and total unintended pregnancy rates. Correct use rates were determined by including in the equation only those menstrual cycles that were used correctly, that is, the women/couples did not have intercourse during the estimated fertile window. Typical or total unintended pregnancy rates included all unintended pregnancies and were based on correct use and incorrect use during menstrual cycles. Descriptive statistics (means and standard deviations) were used to analyze the acceptability levels at 1, 3, and 6 months of use. A one-way repeated-measure ANOVA and paired t tests were used to determine differences between those time periods with a significance level of .05, and corrected to .02 to control for error rate increase.

Results
Participants
Since the website was launched in mid-April of 2008 and up until June 1, 2010, 468 women have registered into the site, of these, 222 have used the online charting system to avoid or achieve a pregnancy. The 468 woman users were between the ages of 18 and 54 (mean age = 29.7 years) and had an average of 1.9 children. Most (83%) were non-Hispanic White, married (85%), and Roman Catholic (85%). Only 6% (n = 28) indicated that they were Hispanic American. Thirty-one percent of the women were postpartum breastfeeding and 50% were experiencing regular menstrual cycles of 25 to 35 days in length. Most (77%) were using the system to avoid pregnancy.

The 222 participants who utilized the online charting system to avoid pregnancy were similar in demographics to those that did not (n = 246) (see Table 1). The only difference was that the charting participants had on average more children. Eighty-five percent were non-Hispanic White, 87% married, and 88% Catholic. Forty-eight percent listed they had regular length menstrual cycles and 48.6% indicated that they were postpartum breastfeeding at the time of registration.

Since the launch of the website there have been over 1,500 posts in the online forums on 350 plus topics. Typical topical areas include charting questions, protocol questions, unusual bleeding, breastfeeding, menstrual cycle variability, infertility, medications and fertility, vaginal infections, polycystic ovarian syndrome (PCOS), menstrual cramping and pain, and fertility monitor questions.

Pregnancy Outcomes
Among the 222 participants who used the online charting system to avoid pregnancy, there were two unintended pregnancies with correct use, which provided a survival rate of 98% for 100 women at six menstrual cycles of use or a 2% unintended pregnancy rate. There were seven total unintended pregnancies providing a typical use unintended pregnancy rate of 7% (see Table 2). However, the six menstrual cycle correct use unintended pregnancy rate was 0% for the nonbreastfeeding participants (n = 114) and 3.8% for the breastfeeding participants (n = 108), that is, they had two unintended pregnancies. The total or typical unintended rate was 9% (four pregnancies) at six cycles of use for the nonbreastfeeding partici-
pants and 5% (two pregnancies) for the breastfeeding participants.

Of the 222 online charting participants, there were 38 participants who indicated a desire to achieve a pregnancy at some time while participating in this online website. In other words, they contributed some menstrual cycles in which they indicated they were avoiding pregnancy and menstrual cycles in which they were trying to achieve pregnancy. Of these 38 participants, they were trying to achieve pregnancy for a mean of 3.12 months before entering the study (range 0–26 months). Of the 38 participants, 19 achieved a pregnancy. Not all were trying for the entire time to achieve a pregnancy. The pregnancy rates (i.e., percentage of those achieving) were 64%, 33%, and 40% for the first 3 months. At 6 months of use the overall pregnancy rate was 60%.

Fertility Knowledge
The website was automatically evaluated online by use of a 10-item true-false fertility knowledge quiz at initial use and at 1 month of use. Mean knowledge of the 96 participants who completed the initial and 1-month 10-item (true false) fertility quiz increased significantly from initial use (8.96, SD = 1.10) to 1 month (9.46, SD = 1.10), t = 4.60, p < .001.

Acceptability
Mean acceptability scores were 45.63 (SD = 8.98) at 1 month (n = 143), 47.59 (SD = 1.012) at 3 month (n = 75), and 48.37 (SD = 8.78) at 6 months (n = 40) of use. The one-way repeated-measure ANOVA of the three time periods showed a significant effect, F(2, 42) = 3.76, p = .031. However, follow-up paired t tests revealed no statistical differences in these mean scores of acceptability between the three time periods. The individual item scores ranged from a low of 3.33 with item #6 “decreased anxiety about pregnancy” to a high of 5.17 with item #10 “chances of avoiding pregnancy” out of a possible range of 0 to 7 (see Table 3).

Discussion
Efficacy of Methods to Avoid and Achieve Pregnancy
The correct use efficacy of all participants who were avoiding pregnancy and using the online charting system, whether postpartum breastfeeding or not, was very good i.e., 98% to 100% survival rate (or a 0–2 unintended pregnancy rate per 100 women over 6 months of use). This correct use unintended pregnancy rate compares well with what is found in the literature for NFP methods (97%–99% survival with correct use; Trussell, 2004) and with the previous three efficacy studies of the Marquette Method of NFP—98% to 99% (Fehring et al., 2007, 2008, 2009). The total typical (or total) survival rate of 93% (3% unintended pregnancy rate) also compared well with the past studies on the Marquette Method (86%–89%) and other NFP methods: 83 to 86% (Howard &

<table>
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<th>Table 3: Acceptability and Ease of Use of Online Fertility Charting</th>
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<td>Months and Number Participants</td>
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<tr>
<td>Ease of including in daily routine</td>
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<td>Ease of performing urine test</td>
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<tr>
<td>Understanding monitor information</td>
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<td>Overall opinion of charting</td>
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<td>Increased ability to avoid pregnancy</td>
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<td>Decreased anxiety about pregnancy</td>
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<td>Ease of using the CPFM/online chart</td>
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<td>How do you like the CPFM/online chart</td>
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<td>Compared to other methods, how improved</td>
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<td>Chances of avoiding pregnancy</td>
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There are few studies that have investigated the efficacy of using NFP methods to avoid pregnancy during the breastfeeding transition (Brown, Harrison, & Smith, 1985; Hatherley, 1985; Labbok et al., 1991). Most have shown that NFP is not very effective or that NFP even increases the unintended pregnancy rate. Howard and Stanford (1999) reported a pregnancy rate of 33% among postpartum women who used a mucus-only method of NFP. Participants in our study utilized a special breastfeeding protocol as described in an earlier report (Fehring et al., 2005). The 95% survival rate (or 5% unintended pregnancy rate) is very good in comparison to past studies. However, the number of cycles and participants that this study represents is at pilot study level and needs many more participants and cycles of use for more valid results.

There are few studies that have investigated the efficacy of using NFP methods or what is sometimes called focused intercourse during the estimated fertile window as a means to achieve pregnancy. Hilgers, Daly, Prebil, and Hilgers (1992) reported a study in which 49 of 50 couples of normal fertility achieved a pregnancy within 5 months by focusing intercourse on days of good quality cervical mucus. German researchers reported the largest prospective study to estimate the cumulative probabilities of conception among a cohort of 346 couples using the symptom-thermal method (i.e., cervical mucus and basal body temperature monitoring) from their first cycle onwards (Gnoth, Godehardt, Godehardt, Frank-Herrmann, & Freundl, 2003). There were a total of 310 pregnancies among the 346 couples during a maximum of 29 cycles of observation. The cumulative pregnancy rates for cycles 1, 3, 6, and 12 for all couples (N = 340) were .38, .68, .81, and .92, respectively. In comparison our (small) study had rates of 24%, 48%, and 60% at 1, 3, and 6 months respectively.

Researchers from Unipath Diagnostics completed a study in which they randomized 1,000 women volunteers into two groups, one group of 500 received an EHFM, and the control group of 500 women volunteers were asked to do what they wished to achieve a pregnancy, including the use of pregnancy assist devices (e.g., ovulation test kits and basal body temperature) (Robinson, Waklin, & Ellis, 2007). The volunteers were between the ages of 21 and 40 years and with a partner between the ages of 21 and 50. The pregnancy rate during the first cycle was 15.2% (or 46 of 302) for the EHFM group and 7.8% (27 of 347) for the control group and 22% for the two menstrual cycle rate for the monitor group. In addition, the researchers provided the users of the EHFM with a satisfaction tool and determined that 90% of the users found the device to be easy or very easy to use, and 80% found it to be convenient or very convenient.

**Fertility Knowledge**

Overall, the participants who completed the online fertility quiz achieved a high level of fertility knowledge. Furthermore, the knowledge of fertility increased significantly after 1 month of fertility charting. Previous studies have shown that couples trying to achieve a pregnancy, college students, and the general population have a low level of fertility knowledge (Lambic, Skoog Svanberg, Karlstrom, & Tyden, 2006; Sydsjo, Selling, Nystrom, Oscarsson, & Kjellberg, 2006). In fact that is one reason that some couples have difficulty in achieving pregnancy (Robinson & Ellis, 2007). The mean fertility knowledge scores of the online participants are very similar to those of our in-person couples.

**Acceptability/Ease of Use**

The mean acceptability scores in the online pilot study increased from 45.6 to 48.7 from 1 to 6 months of use. However, this was not a significant increase. Furthermore, the number of respondents went from a high of 143 at 1 month and down to 40 at 6 months. So the increase in acceptability could be due to those who were most satisfied with the online charting remained in the study and responded at 6 months of use. Although there was a significant change throughout the three time periods in acceptability, there was also a loss of statistical power to determine significant change from one time period to the next. We suspect that many of the participants went back to a paper charting system or to their previous method of NFP.
participants most likely would prefer to use handheld devices to record the menstrual cycle (Zickuhr & Smith, 2010). A future need is to develop a menstrual cycle charting application for handheld devices that could be linked to the online website, for ease of use and for the ability of health professionals to access the menstrual cycle records.

The highest rated items were items dealing with satisfaction and ease of use with the online charting system. However, at 6 months, the highest rated item was chances of avoiding pregnancy. The lowest rated item of “decreased anxiety about pregnancy” was consistent at all time periods. The increase in satisfaction over time for couples avoiding pregnancy is common for those learning and using NFP methods. Severy (2001) and Severy et al. (2006) found increased acceptance of use with the EHFHM that decreased after a time when pregnancy desire was not accomplished. An earlier in-person study of the Marquette Method of NFP generally had higher rated items with the acceptability survey (Fehring, 2008). It is hard to compare these results, however, because the participants in the in-person study only used the hormonal fertility monitor, unlike participants in the online study.

Limitations
Although the intent was to pilot and evaluate the efficacy, knowledge of fertility, and acceptability of a nurse-managed online NFP education and support program, there are limitations to this pilot study that need to be discussed to place the results in context. One of the critical limitations is the large percentage of participants who registered and consented for the study, but failed to chart online, complete the surveys and quiz, and participate for six menstrual cycles. Furthermore, there was a significant drop-off of completing the surveys and quizzes and to charting online for those that did participate. For example, only 222 of the 468 participants charted online, and of these, only 47 were charting at six cycles of use and 140 completed the acceptability survey at 1 month of use and only 40 at 6 months of use. Some of the 468 participants only utilized the website to seek consultation and use the discussion forums. We speculated that although the participants had to register and sign (i.e., click on) a consent form explaining participation, some might have treated the consent in a cursory manner much the same as when people click on consent for new software. There was no incentive for participating in the study other than having free access to the site, the online charting system, and professional consultation.

Since this website was first announced to professional NFP teachers, some of the participants might have been just curious to view the site. However, there was no difference between the mean acceptability scores of the participants who indicated that their current method of family planning was NFP, compared with those who used other methods or none. Another factor to consider is that many of the participants sought the website for help going through the breastfeeding transition and existing health conditions (e.g., PCOS) that might have contributed to irregular menstrual cycles and difficulty in tracking fertility.

Practice Implications
There are a number of practice implications from the findings of this pilot study of an online nurse-managed NFP education and support system. First of all, the online provision of the Marquette Method of NFP is effective and efficient. The overall correct use efficacy is 98% to 99% and typical efficacy is 88% to 94% with the combined results and the separate results of the breastfeeding/postpartum participants. These results compare favorably with and maybe somewhat better than in-person teaching of NFP methods. Second, we found that you can efficiently reach and teach many women and couples throughout the United States in how to use NFP through the Internet and Internet-based online charting. And third, health professionals can efficiently provide health consultation and information on women’s health problems, menstrual cycle questions, and related health topics through the Internet and web-based forums.

Policy Implications. The implication the findings have on policy is that family planning or women’s health clinics (and similar type clinics) could offer NFP services through a nurse-managed Internet site in an efficient and effective manner. These sites could be managed by two to three professional nurses who are familiar with NFP and ideally with collaboration with women’s health nurse practitioners and/or physicians. Other health clinics that do not offer NFP services could be linked into the sites or the clinics could help participate in the NFP services and support by enrolling women/couples and helping to follow those couples online. A similar model could be developed for diocesan NFP pro-
programs, that is, each diocese could have their own Internet NFP service or support system or be linked to such service sites in larger diocese or Archdiocesan programs.

Research Implications. We have several research implications from the findings of this pilot study of an online nurse-managed website. First of all, the use of an online system to enroll, obtain consent, survey, and maintain participants is possible and is an efficient way to conduct efficacy research for NFP methods. Second, the use of such an online website and charting system (with slight modifications) could be used to compare other standardized methods of NFP—such as the Standard Days Method—a fixed calendar-based system or the Two Day Method (Arevalo et al., 2002, 2004). There also needs to be studies (cohort and/or randomized comparison) to determine if in-person teaching of NFP methods are more effective and acceptable than online systems of NFP. Furthermore, we recommend the use of a similar online fertility awareness and educational system to determine if use of an online charting system to track fertility enhances the ability to achieve pregnancy among subfertile women. We currently are conducting a federally funded study to compare the efficacy and acceptability of two methods of NFP: electronic hormonal fertility monitor in comparison with cervical mucus monitoring as an estimate of the fertile phase of the menstrual cycle. Preliminary pregnancy rates and acceptability results have been reported in the proceedings of a recent human fertility conference (Fehring & Schneider, in press).

Conclusion
Our preliminary conclusion is that the use of a nurse-managed online web-based fertility education, charting, and support system to teach a method of NFP can be very effective and efficient. The overall unintended pregnancy rates of those participants who utilized the online automatic charting system are very low. The preliminary results of unintended pregnancy rates for those using the breastfeeding protocol are encouraging. So too are the intended pregnancy rates for those attempting to achieve a pregnancy. Acceptability and ease of use of the online system needs further investigation, especially in references to in-person services.

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