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**NATURAL FAMILY PLANNING**

**Self-assessment of Cervical Pupil Sign is Possible New Natural Family Planning Method**

**I**t is well known among Natural Family Planning (NFP) and fertility awareness method (FAM) teachers that the cervical opening (i.e., cervical os) softens and opens during the peak of fertility, and then closes and tightens soon after ovulation. Users of the Sympto-Thermal Method of NFP are taught to feel for this opening of the cervical os by the insertion of clean fingers into the vagina and to estimate “blindly” the cervical opening. Researchers from Belgium recently conducted a study to determine if women could accurately measure the fertile phase of the menstrual cycle by the self-use of a lighted vaginal speculum called the Femiscope.<sup>1</sup>

Twenty volunteer women between the ages of 21-44 with regular length menstrual cycles participated in the study. Of these 20 women, 7 were nulliparous, and 13 had one or more vaginal births. All of the women had previous experience with NFP methods. These women were taught how to self-assess their cervical os by use of the Femiscope on a daily basis from day 8–18 of their menstrual cycles. They were instructed to rate the cervical opening from 1-3, with 1 = less than 1 mm, 2 = 1 to 3 mm, and 3 = greater than 3 mm. The 3 rating was considered the “pupil” sign. The women volunteers also self-assessed their cervical mucus on a 1-6 rating scale and measured their daily basal body

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temperature (BBT). The BBT shift in temperature was used to verify the estimated day of ovulation. These women produced 58 menstrual cycles of data over a 6 month time period (2-3 cycles per woman). All 58 of the menstrual cycles showed a BBT shift and a 9-14 day luteal phase.

Interestingly, in only 38 (63%) of the menstrual cycles did the self-observation of the cervical opening define the fertile phase, and in only 36 (62%) of the menstrual cycles did the self-observed cervical mucus sign correlate with the fertile phase. The length of the fertile phase by the pupil sign was between 1-11 days (mean 3.1) and by the cervical mucus observations 2-8 days (mean 4.8 days). The researchers determined that the fertile phase by the pupil sign was significantly shorter and more consistent than when estimated by the cervical mucus sign. The authors concluded that the self-assessment of the cervical pupil sign was feasible when used to estimate the fertile phase of the menstrual cycle. They also concluded that the self-assessment of the cervical os and the pupil sign needs further investigation.

### *Comments*

Insertion of a plastic speculum to view the cervical opening is invasive. Ten of the 20 volunteer women in the study reported some pain and discomfort with this method. The researchers will need to show how the use of the Femi-scope and the self-assessed pupil sign is an advantage over the other traditional natural biological indicators, such as using BBT and measuring urinary reproductive hormones. (RJF)

1. Brosens I, Hernalsteen P, Devos A, Cloke B, Brosens JJ. **Self-assessment of the cervical pupil sign as a new fertility-awareness method.** *Fertility and Sterility*, Feb, 13, 2008 (E-pub ahead of print).

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## **FERTILITY**

### **Web-based Patient Education Intervention Found Beneficial for Women Experiencing Infertility**

The medical and technical aspects of infertility tests and treatments can be psychologically challenging for couples with infertility problems. There are few support systems to help patients cope with the psychological aspects of infertility treatment. In today's world, many people pursue medical information and advice from on-line Internet-based programs. However, there have been few studies that have investigated the effectiveness of these on-line programs. Therefore, infertility researchers sought to develop and test the effectiveness of

a brief Web-based education and support system for female infertility patients.<sup>1</sup> They built an on-line program called the Infertility Source program that included information on fertility, reproductive anatomy and physiology, cognitive behavioral skills, and stress management techniques. They hypothesized that those women who were exposed to an on-line Infertility Source program would demonstrate a reduction in infertility-related stress and an improvement in infertility self-efficacy.

The researchers utilized a randomized control trial design in which 190 women, who were at least 21 years old with a diagnosis of infertility, were randomized into a group that was exposed to the on-line Infertility Source program and a group that served as a control and were told that they were in a study to determine how couples cope with infertility. The outcomes that were assessed were infertility distress, infertility self-efficacy, decisional conflict, marital cohesion, and coping style. The researchers found that those women who were exposed to the on-line 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. Those women who were exposed to the Web site for 60 minutes or more experienced a significant decrease in global stress and increased self-efficacy. The researchers concluded that an on-line infertility support program can have beneficial psychological effects and can be a cost effective resource for fertility practices.

### *Comments*

The participants in this study received \$100 for participating and filling out the study questionnaires. Having a financial incentive could be a confounder for the results of the study in that, without the incentive we do not know how effective or how many women would use the Web site. This study also points out the importance of being exposed to the intervention, i.e., the information on the Web site. The study showed that the more exposure to the Web site, the better the outcome. Web site information for fertility and infertility are convenient and accessible. This was the first study to determine the efficacy of an on-line infertility support and educational system. Similar studies are needed to assess the benefits of on-line charting and information for natural family purposes. (RJF)

1. Cousineau TM, Green TC, Corsini E, Seibring A, Showstack MT, Applegarth L, Davidson M, Perloe M. **On-line psychoeducational support for infertile women: a randomized controlled trial.** *Human Reproduction*, 2008;23:554-566.

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## Quality of Infertility Information on the World Wide Web Rated Poor

The Internet has increasingly become the source of information for people seeking health information and advice. A recent study showed that up to 80% of people in the United Kingdom (UK) who are connected to the Internet have used the World Wide Web (WWW) as a source of health information.<sup>1</sup> The use of the Internet as a source of information includes people seeking information on infertility. There are many Web sites dedicated to information on infertility. However, there has never been a study to assess the quality of these web sites. Therefore, researchers from the UK conducted a study to determine the quality of information on infertility available on the WWW.

The researchers did a Google search with the word "infertility" and then assessed and classified the first 107 usable and relevant Web sites that were produced by the search. The Web sites were classified as either: 1) National Health Service (NHS) managed and funded, 2) private assisted reproductive technology (ART) clinic Web site, 3) non-ART treatment providing, 4) commercial information providing, 5) non-profit making information site, and 6) patient forum sites. The quality of the Web site was assessed by 3 key features: credibility, accuracy, and navigability. Credibility was assessed by six criteria, accuracy by three, and navigability by 6, for a total of 15 criteria that were either present or not (See criteria listed below). The researchers summed and averaged the criteria for all 107 sites. Therefore, the maximum score for credibility and navigability was 642 and for accuracy 321.

The researchers found that the total scores for all types of infertility web sites were low. The lowest rated feature was accuracy in which a total of only 50 points out of 321 (16%) were tallied. The highest rated feature was navigability with 60% or 387 points out of 642, and then credibility with 275 of the 642 points (43%) tallied. The highest rated sub- criteria was having fully functional internal and external links with 90% of the sites receiving a score. The NHS ART clinic sites rated higher overall than the private ART clinic sites and the commercial and non-profit information sites. The authors concluded that the quality of Internet information sources for infertility is variable, but generally poor.

### *Comments*

The authors also recommended that individual clinicians rate and assess the quality of Web sites before recommending them to their patients. I would recommend the same for Natural Family Planning and fertility awareness teachers. The criteria for each of the three key Web features are listed below for use in assessment:

#### Credibility:

1. Authorship – names of authors are clearly displayed
2. Currency – either date of last amended or copyright date
3. Legal disclaimer – legal statement disclaiming responsibility for the information presented or what users choose to do with the information
4. Review process – information provided about a review board

5. Funding or sponsorship – information concerning the source of the organization funding
6. Absence of advertising or financial incentives

Accuracy:

1. Claims supported by valid evidence or professional body guidelines
2. Clearly defined success rates
3. Display of accurate references

Navigability:

1. Functional internal and external links
2. Viewer is not directed to unintended sites
3. Active feedback mechanism with e-mail based contact
4. Frequently asked question (FAQ) page
5. A site map
6. Internal search engine

1. Marriott JV, Stec P, El-Toukhy T, Khalaf Y, Braude P, Coomarasamy A. **Infertility information on the World Wide Web: a cross-sectional survey of quality of infertility information on the Internet in the UK.** *Human Reproduction*, 2008;23:1520-1525.
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## MENSTRUAL CYCLE

### Menstrual Cycle Length Found to Correlate with Reduced Ovarian Reserve and Pregnancy Outcome

It is well known that fertility decreases with age, and that this decrease is largely due to reduced ovarian reserve, i.e., decreased amount of follicle/oocyte pool in the ovary. It is also known that mean menstrual cycle length gradually decreases from a maximum length in the 20s to a low in the late 40s. The last 2 years before menopause is a time when the menstrual cycle length and menstrual cycle length variability increases dramatically. Based on this information, researchers from Sweden wished to determine if menstrual cycle length could be used to predict ovarian reserve.<sup>1</sup>

The participants for the study were women seeking IVF treatments for infertility. The researchers recorded the self-recalled menstrual cycle length. Some of the women participants had menstrual cycle diaries, others did not. The outcomes were pregnancy, delivery rates, and follicular stimulating hormone (FSH) levels. The data was taken from 6721 IVF treatment cycles.

As with past studies, the researchers found that increasing age was associated with decreasing mean menstrual cycle length. However, they also found that pregnancy and delivery rates also correlated positively with increas-

ing menstrual cycle length. For example, they found that the pregnancy rate was almost double for women with mean menstrual cycle lengths greater than 34 days compared with women with mean menstrual cycle lengths shorter than 26 days. The researchers also found that menstrual cycle length was associated with FSH stimulation and embryo quality. They concluded that menstrual cycle length was associated with positive IVF outcomes regardless of age, and that menstrual cycle length could possibly be used as a simple marker of ovarian reserve.

### *Comments*

Although I agree with the results, I have 2 concerns with the study. The first is the use of recall data for menstrual cycle length. Although there is some correlation with recall, some studies have shown that there is a considerable amount of error in recall of menstrual cycle length. The second problem is that the researchers used only women with infertility problems. A stronger study would have involved women with regular fertility seeking pregnancy who tracked their cycle length prospectively, i.e., women using NFP or fertility awareness methods. This study does provide another reason for women to monitor menstrual cycles, i.e., to be aware of ovarian reserve. (RJF)

1. Brodin TB, Bergh R, Berglund L, Hadziosmanovic N, Holte J.

**Menstrual cycle length is an age-independent marker of female fertility: results from 6271 treatment cycles of in vitro fertilization.** *Fertility and Sterility*, Dec., 2007, (E-pub ahead of print).

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## **Normative Statistical Parameters of the Menstrual Cycle**

**K**nowing the normal parameters of the menstrual cycle is important for health professionals, so that they can recognize abnormal patterns that might signal significant health problems, such as polycystic ovarian disease. So too, Natural Family Planning teachers should be knowledgeable of normal parameters so they are able to counsel their clients and alert them to what is abnormal or irregular. Most studies conducted on the parameters of the menstrual cycle have included women with abnormal menstrual cycles. Researchers from the University of New Mexico recently conducted a study with only healthy women participants with non-hormonal contraceptive menstrual cycles.<sup>1</sup> These researchers also eliminated any menstrual cycles that were abnormal from their calculation, i.e., menstrual cycles that were longer than 40 days. The purpose of their study was to define the normative statistical parameters of the menstrual cycle, i.e., the length of the follicular, ovulatory, and luteal phases, as well as the timing of implantation.

The participants for this study were 184 healthy women volunteers between the ages of 18–36 years. Of these 184 participants, 17 were eliminated due to unusual cycle lengths or abnormal hormonal levels. The participants had their daily urine collected for laboratory determinations of the peak reading in LH and hCG levels. The length of the follicular phase of the menstrual cycle was defined as the first day of menses until and including the day of the highest LH reading. The participants produced 408 normal non-contraceptive menstrual cycles and 111 menstrual cycles that ended in a pregnancy.

The mean, standard deviation (SD), and the 95% confident interval of the statistical parameter of the menstrual cycle, including total length, follicular phase length, ovulation phase, luteal phase, and day of implantation as determined in this study are shown in Table 1. The day of implantation was determined from the 111 cycles that resulted in a pregnancy. The first detectable hCG reading was considered the day of implantation. The range of the 95% confident interval (CI) can be considered the ranges of normality. The estimated range of the day of implantation could also be interpreted as 5-14 days after the estimated day of ovulation. The finding that implantation can occur as early as day 4 after the day of ovulation is different than has been previously reported in the literature. The authors concluded that the results provided by this study could be used as guidelines for differentiating normal and problem menstrual cycles.

Table 1: Normative Statistical Parameters of the Menstrual Cycle

Parameter	Mean	SD	95% CI	Individual Variance
Total cycle length	27.7	2.4	25-32 days	0.8-5 days
Follicular phase length	14.7	2.4	10-20 days	1.0-13 days
Luteal phase length	13.2	2.0	9-17 days	0.3-9 days
Day of implantation	24.6	3.1	20-30 days	NA

### *Comments*

I agree with the authors that the results from this study can be used as normative parameters of the menstrual cycle. When women have menstrual cycles outside of these lengths, the health professional, NFP provider, or the individual woman should have some concern. Only women who have been tracking the length and the estimated day of ovulation with some type of NFP method would have knowledge of these parameters. (RJF)

1. Cole LA, Ladner DG, Byrn FW. **The normal variabilities of the menstrual cycle.** *Fertility and Sterility*, April, 21, 2008 (E-pub ahead of print).
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## **Follicular Growth During Lactational Amenorrhea Found to Greater than During Normal Ovulatory Menstrual Cycle**

Lactational amenorrhea (LA) is considered to be a time of ovarian quiescence due to the suppression of ovarian hormones by the suckling mechanism that produces prolactin. Included in this quiescent period are not only low levels of estradiol and progesterone but also follicular growth. It is thought that elevated levels of prolactin make follicles less responsive to the actions of FSH and LH. However, very little is known about the biological mechanisms that take place during LA and the anovulation that is associated with breastfeeding. Therefore, researchers from Chile and Argentina decided to conduct a longitudinal study of LA in order to describe the steroidal and follicular dynamics that occur during breastfeeding and the subsequent ovulatory menstrual cycles.<sup>1</sup>

The participants for this study were 22 healthy nursing mothers (between the ages of 18-23) that were accessed in a maternity ward within 2 days after a normal vaginal singleton delivery. All of these women were instructed to (and agreed to) exclusively breastfeed their baby for the first 6 months post-partum. At the 60<sup>th</sup> day post-partum these women had ultrasound exams of their ovaries and blood samples taken twice a week for 4 consecutive weeks. When their menstrual cycles resumed, vaginal ultrasound examinations and blood samples were drawn on days 1-4 (which was labeled the early follicular phase, EFP) and days 7-10 (which was labeled the mid follicular phase, MFP) of the second and third menstrual cycle post-partum. The blood samples were assayed for FSH, LH, prolactin, estradiol, progesterone, inhibin A, inhibin B, and Pro-alpha C levels. Of the 22 participants, 10 entered and completed the study.

The results showed that the number and diameter of the follicles were significantly greater during LA compared to the EFP or the MFP. Estradiol levels were similar during LA, EFP, and MFP. In comparison to the EFP and the MFP phases of the menstrual cycle, LA is associated with higher prolactin levels, normal or slightly elevated steroidal gonadotrophins (LH and FSH), and increased number and size of follicles, without an increase in estradiol, inhibin B, and Pro-alpha C. The authors concluded that during LA there is a profound dissociation between follicular growth and follicular endocrine activity.

## Comments

The more we learn about the mechanisms of how breastfeeding suppresses the ovarian activity, the more likely we will be able to provide better instructions for monitoring fertility during this transition from amenorrhea to ovulatory menstrual cycles. My only criticism of this study is that the MFP was actually in the later stages of the follicular phase. In this study the MFP was days 7-10, but, there is evidence that ovulation is delayed in the first 3 or more post-partum menstrual cycles. If they measured the follicular sizes from days 10-16, I think that they would have found they were greater. (RJF)

1. Velasquez EV, Trigo RV, Creus S, Campo S, Croxatto HB.

**Pituitary-ovarian axis during lactational amenorrhoea. I. Longitudinal assessment of follicular growth, gonadotrophins, sex steroid and inhibin levels before and after recovery of menstrual cyclicity.** *Human Reproduction*, 2006;4:909-915.

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## CONTRACEPTION

### **Discontinuation Rates of Fertility-Awareness Methods Found to be High Compared to Other Family Planning Methods**

**W**omen of child bearing years often discontinue methods of contraception for many reasons (other than seeking to achieve pregnancy) and switch to another method that they believe will fit their lifestyle better, be more effective, have less side effects, or maybe be easier to use. The transition from one method to another, however, is a time when women often become unintentionally pregnant. Researchers from the Guttmacher Institute in collaboration with Professor James Trussell at Princeton University recently analyzed data from the 2002 National Survey of Family Growth (NSFG) to determine the discontinuation rates of the pill, injectable, male condom, withdrawal, and fertility-awareness based methods of family planning.<sup>1</sup> They analyzed the 2002 NSFG data and adjusted the results based on the underreporting of abortion.

The 2002 NSFG is a population data base conducted on a periodic basis by the National Center for Health Statistics. The 2002 NSFG involved 7643 women between the ages of 15-44. The participants in the NSFG were interviewed in person by inputting data into a laptop computer. The researchers discovered that the discontinuation rate for method-related reasons within the first year was as follows, 57% for the male condom, 54% for withdrawal, 53% for fertility-awareness based methods, 44% for injectables, and the lowest was 33% for the pill. The researchers also found that although these wo-

men abandon a method of contraception, 72% will resume another method of contraception within the initial month of exposure. The researchers did not analyze the reasons for the discontinuation of fertility-awareness based methods. The researchers did find for all methods that teenagers and those cohabitating are more likely to abandon contraceptive methods compared to non-teenage married women.

### *Comments*

Although the discontinuation rates are fairly high with fertility-awareness based methods (according to the NSFG 2002 data), one should keep in mind that included in these methods are self-devised calendar methods. If the researchers analyzed only those women who were married and were using a more modern method of NFP, such as temperature or cervical mucus methods, they most likely would find a much lower discontinuation rate. Furthermore, in a recent study involving the same data from the 2002 NSFG, researchers found that there was a very low discontinuation rate with fertility-awareness based methods due to dissatisfaction, i.e., only 14.6% for ever-users of fertility awareness methods.<sup>2</sup> (RJF)

1. Vaughan B, Trussell J, Kost K, Singh S, Jones R.

**Discontinuation and resumption of contraception use: results from the 2002 National Survey of Family Growth.** *Contraception*, 2008; Article In Press.

2. Moreau C, Cleland K, Trussell J. **Contraceptive discontinuation attributed to method dissatisfaction in the United States.** *Contraception*, 2007, E-pub August, 28, 2007.

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## **12 Month Typical Use Failure Rate of Fertility-Awareness-Based Methods Estimated to be 25%**

**R**esearchers from the Alan Guttmacher Institute and Princeton University recently analyzed the data from the 2002 (Cycle 6) National Survey of Family Growth (NSFG) to determine contraceptive failure rates of the most commonly used methods of family planning in the United States.<sup>1</sup> They also compared the 2002 data with the 1995 NSFG data to determine trends in contraceptive failure among these methods. A rationale for analyzing this data was that contraceptive failure is the biggest cause of unintended pregnancy and, as a result, higher abortion rates. Another reason is that the US Department of Health and Human Services has stated a goal of reducing the unintended pregnancy rate as a result of contraceptive failure from the estimated 13% in 1995 to 7% in the year 2010.

The NSFGs are periodic population based surveys conducted by the National Center for Health Statistics on women between the ages of 15-44. The 2002 NSFG composed a sample of 7643 women. The methods of family planning that the researchers analyzed were the 5 most commonly used methods in the US. These methods are injectable contraceptives, oral contraceptives (i.e., the pill), the male condom, withdrawal, and fertility-awareness-based (FAB) methods (that included calendar, mucus, temperature, periodic abstinence, and Natural Family Planning). The researchers used life table analysis to determine typical use failure rates at 3, 6, and 12 months of use. They also used a statistical technique to correct for under-reporting of abortion. Typical use unintended pregnancy rates includes imperfect or inconsistent use of the methods.

The 12 month probability of failure for the five contraceptive methods (when corrected for the underreporting of abortions) were as follows: 6.7% for injectables, 8.7% for the pill, 17.4% for male condom, 18.4% for withdrawal, and 25.3% for FAB methods. The overall total unintended pregnancy rate for all methods combined was 12.4%. In contrast the 1995 NSFG unintended pregnancy rates were as follows: 5.4 % for injectable, 8.8% for the pill, 17.8% for male condom, 28.4 % for withdrawal, and 22.6% for FAB methods. The overall unintended pregnancy rate was 14.9%. Although not statistically significant, the unintended pregnancy rate for FAB methods was 2.7% higher in 2002 than in 1995.

Other findings of interest were: 1) women aged 30 and older were less likely to experience unintended pregnancies; 2) non-Hispanic black women were the most likely sub-group race to experience unintended pregnancies; 3) the unintended pregnancy rate among poor women below the poverty level remained high in 2002, i.e., at a 19.9% level; and 4) co-habiting women have the highest risk of having unintended pregnancies, 9.5% in 2002.

The authors concluded that there was no clear improvement in contraceptive failure rates from 1995-2002, and that failure rates were particularly high for condom, withdrawal, and FAB methods.

### *Comments*

The failure rates for FAB methods are somewhat skewed in that they include not only the more modern methods of mucus and temperature monitoring, but also self-devised calendar or counting methods. These "self-devised" methods would most likely be used by the highest risk groups (e.g., poor, single, sexually active adolescent women), and, thus, these methods would have increased failure rates. I would like to see a comparison of the 1995 to 2002 data with the "true" Natural Family Planning methods that include self-observations of

markers of fertility among married women. However, the number of users in this category would probably be too low for analysis purposes. (RJF)

1. Kost K, Singh S, Vaughan B, Trussell J, Bankole A. **Estimates of contraceptive failure from the 2002 National Survey of Family Growth.** *Contraception*, 2002;77:10-21.

## **Increased Breast Tissue Proliferations found with Combined Oral Contraceptives**

There are many health benefits for women taking combined oral contraceptives (COCs), but there are health risks as well, such as thrombosis, that could lead to a stroke or myocardial infarction. Another health risk is breast cancer, in particular for young women who are on COCs for a long time before discontinuing or becoming pregnant. Researchers from Stanford University and the Federal University of Brazil recently conducted a study to investigate further the possible influence of COCs on breast tissue (i.e., mammary epithelial cells) during one cycle of use.<sup>1</sup> The proliferation of normal breast epithelium is most extensive during the natural luteal phase of the menstrual cycle.

The researchers enrolled 82 volunteer patients who were undergoing excision of a fibroadenoma. The 82 women, who were between the ages of 14-36 with normal length menstrual cycles and who never used COCs, were randomized into either a treatment group that received one cycle of COCs (containing ethinyl estradiol and levonorgestrel) or a control group that had a normal spontaneous menstrual cycle. Serum progesterone levels were taken to document suppression of endogenous progesterone secretions with the COC participants and to determine the phases of the menstrual cycle with the control group members. All participants had mammary tissue biopsied throughout the menstrual cycle. There were no statistical differences in age of menarche, number of pregnancies, parity, and lactational history.

The researchers found a greater proliferation index in the COC group compared to the normal cycling control. They also found greater proliferation in the COC cycles during the first week of the pseudo-menstrual cycle. The researchers speculated that this alteration in the pattern of proliferative activity may explain some of the increased risk of breast cancer associated with COC use.

### *Comments*

Epithelial cell proliferation in normal (non-COC) menstrual cycle occurs in the luteal phase, when both estrogen and progesterone levels are high. This mechanism suggests that there is a synergistic mechanism. The fact that this takes place early in the menstrual cycle and continues throughout the use of COCs might explain some of the possible carcinogenic effects of COCs. The

researchers made it clear that this study needs to be replicated in order to validate these findings. (RJF)

1. Narvaiza DG, Navarrete AH, Falzoni R, Maier CM, Nazario ACP. **Effect of combined oral contraceptives on breast epithelial proliferation in young women.** *The Breast Journal*, 2008;14:460-465.
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## **Women using Hormonal Contraceptives Report More Negative Well-being Compared to Women with Natural Hormonal Menstrual Cycles**

Little research has been conducted to determine the effects of hormonal contraception, and, in particular, injectable hormonal contraception (i.e., Depo-Provera), on the physical and psychological well-being of women. Injectable contraceptives, unlike oral hormonal contraception and natural menstrual cycles, do not have the cyclical variations of the hormones estrogen and progesterone. Therefore, women on the injectable contraceptive probably would not vary in their well-being as would women with variations in hormonal profiles. Researchers from the University of Hawaii conducted a study to determine if there were differences in well-being of women who used Depro-Provera injectable contraceptives compared to women with natural hormonal menstrual cycles, and with women on cyclical hormonal oral contraceptives.<sup>1</sup>

The participants for this study were 36 women, selected by convenience with flyers and short announcements at university events and courses. Most of the women participants were students from the researcher's University. Twelve of the women were using DepoProvera, 12 were using oral hormonal contraceptives, and 12 were using condoms or coitus-interruptus during intercourse and, thus, had hormonal free menstrual cycles. All of the participants were asked to complete a well-being questionnaire and monitor their sleep and exercise patterns on a daily basis for 3 menstrual cycles (or for three 28 day cycles for the women on DeproProvera). The 36 women produced 108 menstrual cycles of data. The participants ranged in age from 18-36 years.

The researchers found that the women participants in the natural hormone group reported significantly less negative well-being compared to women in the hormonal contraceptive groups (i.e., the oral and injectable hormonal contraceptive participants). Furthermore, the women with natural hormonal menstrual cycles and the women on cyclical oral hormonal contraception reported more positive well-being mid-cycle that was correlated with increased sleep. This variation in well-being was not reported with the Depo-Provera group of women. The authors concluded that the use of DepoProvera interfered with the natural relationships between sleep, well-being, and cycle phases.

The results of this study must be taken with reservations, since the participants were selected by convenience and were not randomized into the three groups. Therefore, there could be other reasons for the differences in well-being found between the three groups. Furthermore, there were not enough participants in each group to have enough statistical power to elicit statistical differences on many of the variables. I did find it interesting that negative well-being (as measured by a multiple item questionnaire that is utilized to diagnose premenstrual dysphoric disorder or PMS) was less among the natural hormonal menstrual cycle group, since hormonal contraceptives are often used to treat that syndrome. I would like to see a replication of this study with non-sexually active women in the natural hormonal group, since sexual relationships could be a confounding variable.(RJF)

1. Brown SG, Morrison LA, Larkspur LM, March AL, Nicolaisen N. **Well-Being, Sleep, Exercise Patterns, and the Menstrual Cycle: A Comparison of Natural Hormones, Oral Contraceptives and Depo-Provera.** *Women & Health*, 2008;47:105-121.
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## UNDER THE MICROSCOPE

### Breastfeeding and Early Pregnancy Loss

William Saletan, a political columnist for the on-line Web site *Slate* (see [www.slate.com](http://www.slate.com)), recently wrote a letter to the Secretary of the U.S. Department of Health and Human Services (Michael O. Leavitt) concerning the administration's proposal to eliminate financial aid to health care institutions that violate the right of health care providers who, for reasons of conscience, refuse to participate in abortion and the prescribing of potential abortifacient contraceptive methods.<sup>1</sup> Throughout his letter Mr. Saletan ostensibly supported the administration's proposal. Saletan stated in the letter that the government should not only protect health care providers who refuse to participate in abortion, but also provide protection for employees that are involved in other potential abortifacient activities, i.e., those employees that promote and teach breastfeeding, those who are involved with the manufacture or selling of coffee in any capacity, and those who are involved with promoting exercise. He provided studies and evidence that all three of these activities are potentially abortifacient. Obviously his proposed extension of the right to refusal for conscience purposes by health professionals to breastfeeding, coffee, and exercise was full of sarcasm and is a type of *reductio ad absurdum*.

The study he cited for evidence that breastfeeding can act as an abortifacient was conducted by a group of researchers (including NFP professional

nurse teachers) at the Pontifical Catholic University of Chile (i.e., Pontificia Universidad Católica de Chile) and published in 1992.<sup>2</sup> The study involved a comparison of 49 fully breastfeeding post-partum women and 25 non-nursing women who had regular menstrual cycles. The researchers measured plasma estradiol (E) and progesterone (P) levels twice a week up to the second postpartum menses. They found that the first post-partum menstrual cycles of the breastfeeding women had longer follicular phases but shorter luteal phases, and lower E and P levels than the non-nursing women. The luteal phase for the breastfeeding women was on average 9.2 days (SD=0.5) in length and for the non-nursing women 13.3 days (SD = 0.4). Since about one-fourth of the non-nursing women became pregnant during the study time period, but only 7% of the breast-feeding women, the authors speculated that the reason for such a difference was due to interference with implantation of the embryo associated with luteal phase defects.

Another study conducted by researchers from Johns Hopkins University concluded the same thing.<sup>3</sup> They monitored 60 breastfeeding women from Baltimore and 41 from Manila (Philippines) by having them provide urine samples for E, P, LH, and human chorionic gonadotropin (HCG) on a daily basis. They found that 41% of the first ovulation cycles had luteal phase defects. They also found a 6 % pregnancy rate in the first cycle after the first menses. These researchers did not report the actual luteal phase lengths. In another study, an Australian research group analyzed the P levels of 89 breastfeeding women by daily salivary samples.<sup>4</sup> They defined a deficient luteal phase when P levels were less than 40 pg/mL and a short luteal phase as a period of 11 days or less from ovulation to menstruation. They found only 32% of the women had adequate luteal phases after their first menstruation. Another earlier study by an Australian group found with 55 post-partum breastfeeding women that, after the first menses, 40% had anovulatory ovarian activity, 25% experienced ovulation but with short luteal phases, and 16% had normal ovulations with deficient luteal phases, i.e., luteal phase lengths less than 11 days.<sup>5</sup>

It is clear from the evidence provided by the above studies that there are many (25-40%) deficient (hormonally) and short (by days) luteal phases in the first post-partum menstrual cycle. There also is evidence that the pregnancy rate of women during the first post-partum menstrual cycle is much lower than expected in normal cycling women, i.e., 6-7% compared to 25%. The most logical explanation is that luteal phase defects cause a failure in implantation of the embryo. However, all of this evidence is indirect. None of these studies compared the pregnancy rate or the luteal phase parameters with post-partum non-breastfeeding women. However, an earlier study from Ireland monitored the daily salivary estrogen and P levels of 30 post-partum breastfeeding and non-breastfeeding women.<sup>6</sup> As expected, they found that the return of first menstruation among the 20 breastfeeding women was much longer than the non-lactating women, i.e., a mean of 127 days compared to 57 days. The researchers also found that 44% of the breast-feeding women and 40% of the

non-lactating women had abnormal luteal phases. There was no evidence for differences in the amount of luteal phase defects in the first menstrual cycle post-partum among the breastfeeding and non-breastfeeding women. In both groups 50-56% of the first cycles were anovulatory. Therefore, the luteal phase deficiency might not be due to breastfeeding but rather the hormonal readjustment that occurs during the post-partum time frame. Furthermore, the decreased pregnancy rates for post-partum breastfeeding women might largely be due to anovulatory menstrual cycles, i.e., menstrual cycles with no chance of fertilization.

Evidence from other recent studies also raises some questions about whether breastfeeding might cause a disruption in implantation due to luteal phase defects. A study, reviewed earlier in this publication, showed that among normal menstrual cycles, implantation (as determined by HCG levels) can occur as early as the 4<sup>th</sup> day post-partum.<sup>7</sup> The researchers gave a normal range of 5-14 days for the luteal phase. The 11 day post-partum mean reported for breastfeeding cycles (i.e., as reported in the above studies) fit well into this range. Bukulmez and Arici questioned the wisdom of diagnosing a luteal phase defect and preferred to view it as an ovulatory defect.<sup>8</sup> The authors point out that luteal phase defects are poorly defined and often diagnosed in women with proven fertility.

Even if breastfeeding caused luteal phase deficiencies and impaired the implantation of human embryos, it is not the moral equivalent of the use of hormonal contraception to prevent pregnancy. Breastfeeding is done primarily for the intent of providing adequate nutrition for the neonate. Breastfeeding is natural and healthful for both the baby and the mother and is recommended, for at least one year, by the American Pediatric Association. Breastfeeding is better than artificial nutrition. Although a secondary effect of breastfeeding is the suppression of ovulation and a help in spacing children, the suppression of fertility is a natural process. The baby is the child of the mother, and the natural order is to feed and protect the child. Therefore, breastfeeding is a natural process that is good for the woman and baby that might have an unintended effect of disrupting implantation of an embryo. Breastfeeding is a good and natural act for the purpose of a good end that also (at times) might result in an unintended death of embryos.

Hormonal contraception, on the other hand, is used for the purpose of suppressing a natural process (i.e., fertility) for the intended effect of avoiding pregnancy and having intercourse without any consequences. Hormonal contraception deceives the natural fertile rhythms of the woman. Even though breastfeeding could be viewed as an external hormonally suppressing process, the child's need for nutrition is not. Breastfeeding is the natural way for the child to receive nutrition. The ingestion of steroidal hormones frustrates the natural fertility of the woman. Furthermore, the suppressing effect of breastfeeding diminishes as the baby grows and starts to utilize solid foods and liquids. The

use of and need for hormonal contraception continues throughout the entire reproductive life of the woman. Hormonal contraception involves the use of an unnatural means (and some believe a bad means) for the purpose of a good end (i.e., suppressing fertility to plan a family and, for some, merely to avoid a pregnancy) that also has bad consequences for the woman (and her partner and society) and might cause the demise of embryos on a monthly basis.

A secondary reason for using hormonal contraception might be to enhance one's health or to treat a disease process. The hormones, however, might just as well cause health problems, such as increased risk for blood clots, stroke, heart attack and breast cancer. Furthermore, the use of hormonal contraception prevents the integration of fertility within the marital act of intercourse. The intention of hormonal contraception is to frustrate this integration. Hormonal contraception is not a holistic but rather a non-integrative externally controlled act. Whereas breastfeeding diminishes fertility, especially in the first 6 months of use, the infertility that is established is not permanent and is more like the infertility that one experiences after menopause, i.e., it is a natural infertility. But probably the biggest difference between hormonal contraception and breastfeeding is that contraception takes fertility and procreation out of the picture altogether. It makes the contracepting individual susceptible to being an object of sex rather than a person deserving of love and acceptance of who they are – not who they are minus their fertility. The use of hormonal contraception can lead to the view that fertility and the potential child are the enemy that needs to be avoided rather than cherished. This was the view of contraception that was put forth by Pope John Paul II in the encyclical "*Evangelium Vitae*." The pope also felt that if fertility and the resulting unintended pregnancy are viewed as the enemy (something to be avoided by means of contraception or sterilization) and if an unintended pregnancy should happen, the pregnant woman would be more inclined to use abortion to terminate the pregnancy she thought she responsibly prevented.

To morally equate breastfeeding with hormonal contraception in causing early pregnancy loss is absurd. Saying that breastfeeding is a cause of early pregnancy loss and that health professionals should inform women of this process is tantamount to saying that we should warn women against living the good life. No more so than would a health professional warn a woman about driving a car because she might get into an accident and kill a pedestrian. As Miller points out in his essay on contraception, contraception is contrary to reason itself, and so it is immoral.<sup>10</sup> Breastfeeding is not contrary to reason and contrary to the expectation that it is a good for a woman to nourish her child through breastfeeding. Saletan in his opinion article is trying to argue that it is absurd for health professionals to refuse to prescribe both the use of contraception and breastfeeding. However, his parallel absurdities do not logically work.

In summary, the evidence that breastfeeding is a cause of early pregnancy loss is weak. There is no evidence that there is any difference in the luteal phase in the first menstrual cycle post-partum when you compare non-lactating women with breastfeeding women. Furthermore, the reason for the low fertility rate in the first menstrual cycle might be due to anovulation rather than a diminished luteal phase. Even if breastfeeding were a cause of early pregnancy loss, breastfeeding is not the moral equivalent of hormonal contraception – which has a potential effect of preventing implantation of early embryonic human life. Breastfeeding with the intent of nourishing the child is a natural and healthy process for both the mother and child. The aim of hormonal contraception, on the other hand, is the subverting of a natural process for the intent of preventing pregnancy. The idea that health professionals should inform women about the potential abortifacient effect of breastfeeding is absurd.

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