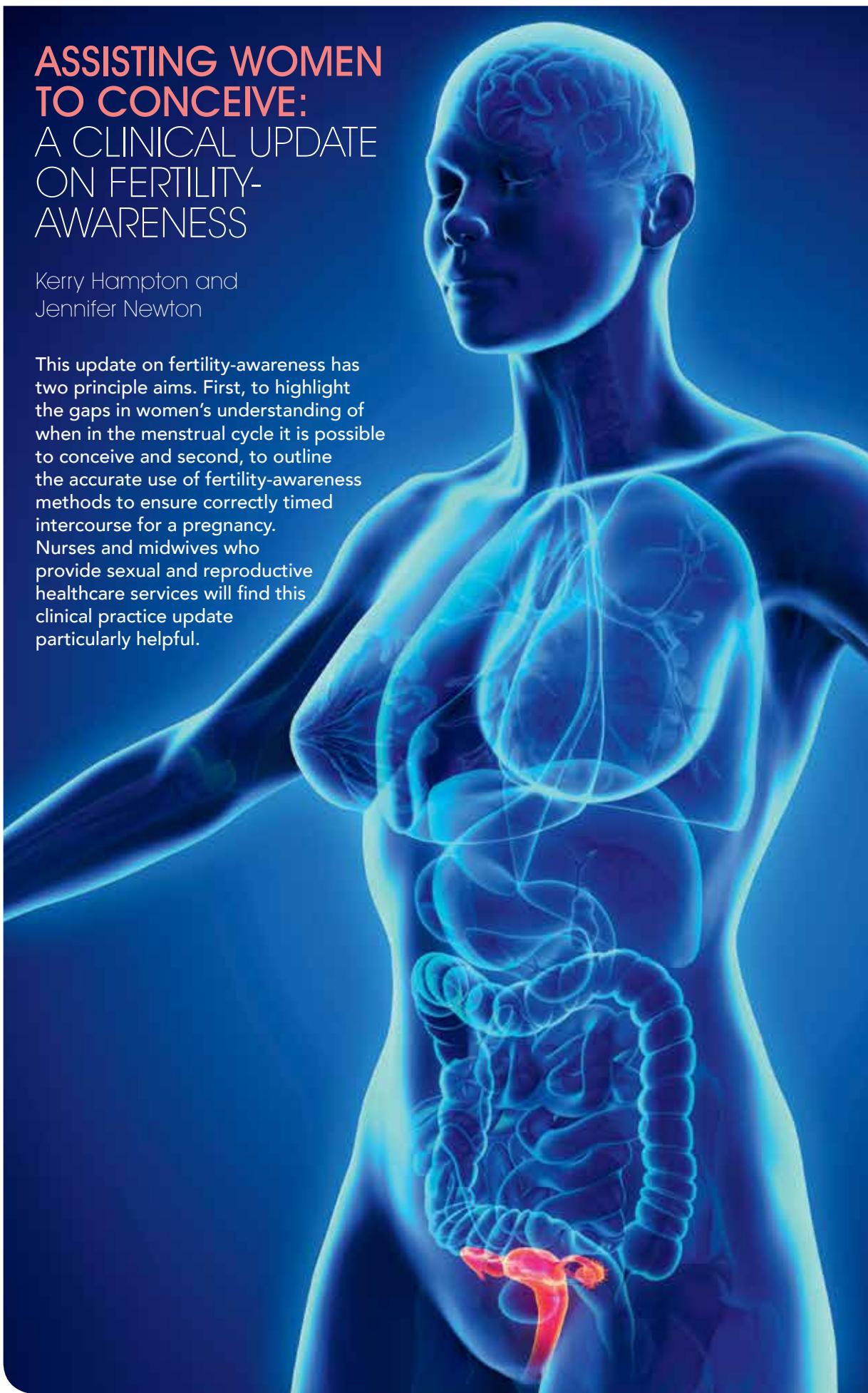


ASSISTING WOMEN TO CONCEIVE: A CLINICAL UPDATE ON FERTILITY-AWARENESS

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This update on fertility-awareness has two principle aims. First, to highlight the gaps in women's understanding of when in the menstrual cycle it is possible to conceive and second, to outline the accurate use of fertility-awareness methods to ensure correctly timed intercourse for a pregnancy. Nurses and midwives who provide sexual and reproductive healthcare services will find this clinical practice update particularly helpful.



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The article begins by defining 'fertility-awareness', then outlines the main findings of a recently completed fertility-awareness study (Hampton, 2014), and concludes with recommendations for practice on use of fertility-awareness methods in assisting women to conceive.

Defining fertility-awareness

Fertility-awareness is generally defined as a woman's ability to identify the fertile period of the menstrual cycle. There are three methods of fertility-awareness (rhythm, temperature, and mucus); however, all vary in their capacity to identify the 'fertile period'. For example, rhythm is accurate for less than one-third of women who have a regular monthly menstrual cycle (Fehring et al. 2006), whereas both temperature and mucus are highly accurate (Pallone and Bergus, 2009). Temperature and mucus are now known as 'modern fertility-awareness methods', to help distinguish them from the outdated and much less accurate rhythm method.

Fertility-awareness study

We conducted a four-year fertility-awareness study with the aim of informing a future primary care model (Hampton, 2014). Primary care interventions that included fertility-awareness have reduced referrals for assisted reproductive technology (ART) treatment by assisting spontaneous conception (Stanford et al. 2008; Tham et al. 2012). However, no such intervention currently exists in Australian general practices, despite the healthcare system's transition to a preventive model of healthcare to reduce reliance on costly specialist treatment (Department of Health and Ageing, 2010).

The study used a mixed methods design and involved both women and their primary healthcare (PHC) practitioners – general practitioners (GPs) and primary healthcare nurses (PHCNs). Concordant with published international research, we found that women's understanding of the fertile period of the menstrual cycle is generally poor across the reproductive life course (Hammarberg et al. 2013; Lundsberg et al. 2014). Similarly, we found that women's PHC practitioners are generally aware of women's low levels of knowledge on this aspect of their reproductive health.

Although women's interest in fertility-awareness rises sharply when they experience trouble conceiving – increasing from 37% among women who attend general practice to 87% among women who attend ART

clinics – their knowledge of the 'fertile period' only increased slightly, up from 2% to 13% respectively. The main sources of women's information were the internet, books, and general practitioners. We found that unanimity exists among women (95% and 92%) and their PHC practitioners' (89%) that women's fertility-awareness should be enhanced when first reporting trouble conceiving. Similarly, both GPs and PHCNs (93%) nominate nurses and midwives as the most preferred practitioners to deliver such education for women in general practice (Hampton 2014; Hampton et al. 2016).

Consistent with these findings, both temperature and mucus, the most accurate fertility-awareness methods, were poorly understood by women and their PHC practitioners alike. Correspondingly, rhythm, the least accurate fertility-awareness method, was the most frequently taught method in general practice (57%) and most frequently used method by infertile women (51.9%) before resorting to assisted fertility treatment at ART clinics.

Our study highlights a critical gap in the primary care of infertile women and also an opportunity for expanded scope of practice for PHCNs to redress this gap in the initial assessment and care of infertile women in general practice.

Current trends in the care of infertile couples

Infertility (the failure to conceive after 12 months of trying) occurs in one in six Australian couples (Loxton and Lucke, 2009). Couples who report trouble conceiving in general practice are increasingly being referred to ART clinics. ART treatment is, however, costly, highly invasive and associated with increases in morbidity and mortality for both mothers and their babies. In addition, concern is mounting about the possible overuse of ART treatment (Kamphuis et al. 2014).

Benefits of fertility-awareness

Intercourse within the fertile period of the menstrual cycle is essential for a pregnancy (Wilcox et al. 2000) and may help some couples to overcome infertility whether the cause is a male or female factor problem (Stanford et al. 2008; Tham et al. 2012). A lesser known benefit of correctly timed intercourse is that it may halve the usual time to pregnancy, with 85% of couples being pregnant at six months rather than at 12 months (Colombo and Masarotto, 2000; Gnoth et al. 2003). Proponents have long argued that the knowledge is low cost,

without side-effects, and compatible with the religious or philosophical values of those who cannot use ART treatment or choose not to use ART treatment (ESHRE Capri Workshop Group, 2004; ESHRE Task Force on Ethics Law, 2009).

Below, an overview of fertility-awareness methods is presented together with the advantages and limitations of each method when used for guiding timed intercourse.

Fertility-awareness methods

Mucus method

The mucus method is the most accurate and most useful fertility-awareness method to guide timed intercourse, as this method *prospectively* indicates the entire fertile period of the menstrual cycle by the presence of fertile-type mucus at the vulva. Fertile-type mucus is released from the cervix and is present for an average six days leading up to the day of ovulation in the menstrual cycle. Over these days, a sensation at the vulva changes from moist to wet to wet/slippery, then back to dryness or an unchanging sensation of slight moistness. When fertile-type mucus is observed, it is clear, shiny, and stringy in appearance. The last day fertile-type mucus is sensed or observed at the vulva is called the peak day of fertility, as this is the most likely day of ovulation in the menstrual cycle. Outside the fertile period, sensation at the vulva is one of dryness or a slight unchanging moistness. When mucus is observed at this time, it is a dense white/creamy colour (Odeblad, 1994).

Advantages and limitations

The mucus method enables the entire 'fertile period' to be observed, irrespective of whether the menstrual cycle is monthly and regular or irregular (Odeblad, 1994).

Intercourse timed within the three-day period just prior to ovulation optimises the chance of a pregnancy. With the mucus method, women can know for certain that intercourse was correctly timed for pregnancy. Women who may find this method challenging include those who suffer from dysmorphic body disorder or have a history of sexual abuse. Infections of the vulva or vagina will impair accurate observation/sensation of mucus changes.

Temperature method

The temperature method is the next most accurate fertility-awareness method. This method *retrospectively* indicates the timing of ovulation in the menstrual cycle by a basal body temperature (BBT) rise of 0.2 to 0.5



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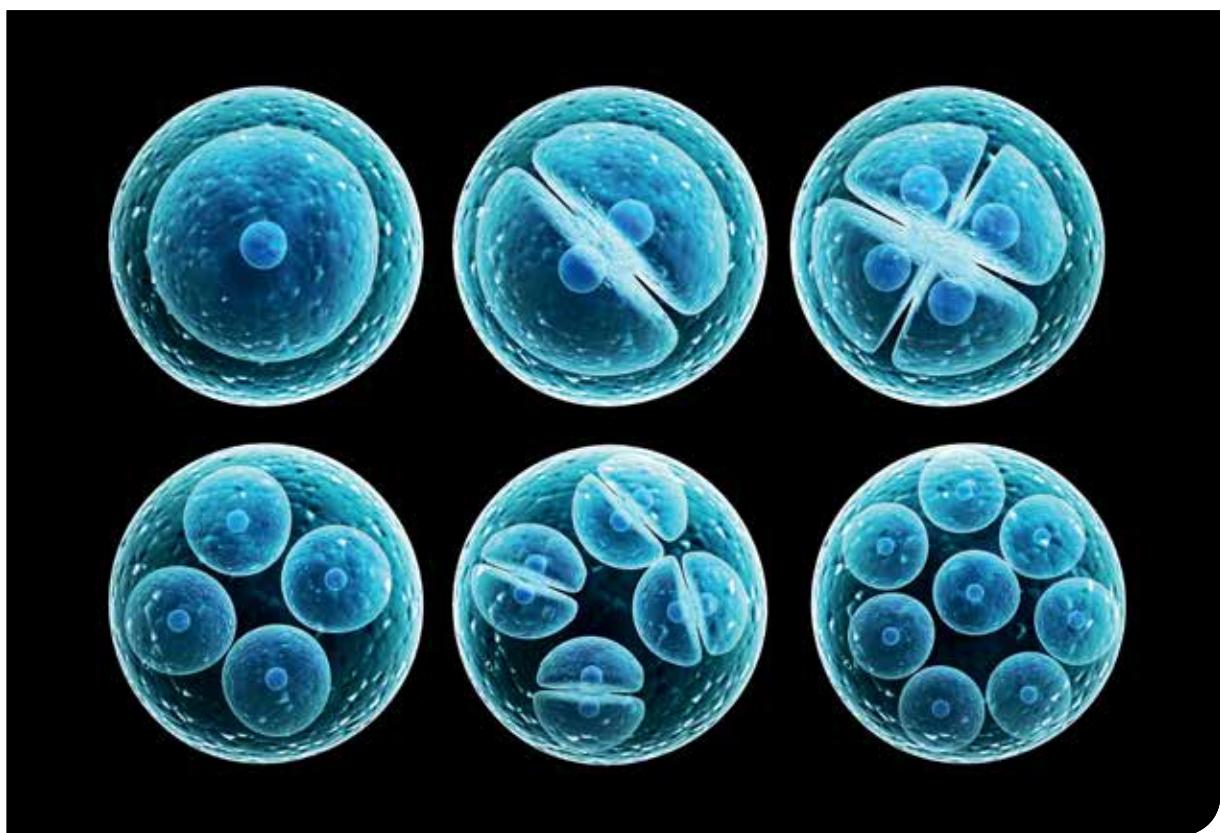
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degrees Celsius that remains elevated until next menstruation. The BBT is the resting temperature of the body after a minimum of four to six hours of sleep. The temperature must be taken with an ovulation thermometer on waking each morning from the same site, either orally or vaginally. Ovulation usually occurs at the bottom of the sustained BBT rise. Three consecutive elevated BBTs over a lower previous six confirm the occurrence of ovulation (Colombo and Masarotto, 2000).

Advantages and limitations
With the temperature method, consecutive fertility charts are needed to guide timed intercourse in anticipation of ovulation. Intercourse within the three-day period just prior to the BBT rise optimises the chance of pregnancy (Pallone and Bergus, 2009).

Only in retrospect can women know for certain that intercourse was correctly timed with this method (Colombo and Masarotto, 2000). The retrospective nature of the temperature method is an obvious limitation (Pallone and Bergus, 2009). Ideally, it is combined with mucus, and when this occurs the method becomes known as the symptom-thermal method (Colombo and Masarotto, 2000). This double check method is especially helpful for women who have an irregular menstrual cycle (Colombo and Masarotto, 2000). Factors that can render BBT measurements inaccurate

include alcohol consumption, late nights, oversleeping, disrupted sleep, travel, time zone differences, stress, illness, and medication (Pallone and Bergus, 2009).

Rhythm method

As previously mentioned, the rhythm method is the least accurate fertility-awareness method. This method estimates the timing of the fertile period of the menstrual cycle by applying two calculations: one to estimate the 'early safe days' and the other to estimate the 'late safe days'. The 'fertile period' comprises the days that fall between the calculated 'safe days' (Fehring, 2004).

These calculations are based on the earliest and the latest possible time that ovulation might occur in the menstrual cycle as well as the maximum lifespan of sperm and ovum. Based on these calculations, the fertile period is days six to 24 inclusive. The 'early safe days' are estimated by subtracting '21' from the shortest menstrual cycle recorded in the previous six to 12 months: (ie. $27 - 21 = 6$: days 1-5 are considered the 'early safe days'). The 'late safe days' are calculated by subtracting '10' from the longest menstrual cycle recorded in the previous six to 12 months (ie. $34 - 10 = 24$: days 25 onwards are considered the 'late safe days'). These calculations can seem confusing, and few women who report using rhythm actually apply them (Murayamas et al. 1987).

Advantages and limitations

Rhythm calculations significantly overestimate the duration of the 'fertile period', necessitating intercourse to occur daily or second daily over many more days than pregnancy is a possibility (Pallone and Bergus, 2009). This approach may be difficult for some couples to maintain (Scarpa et al. 2007) and unsatisfactory for others who wish to be certain of correctly timed intercourse (Stanford et al. 2002). Rhythm is accurate for less than one-third of women who have a regular monthly menstrual cycle (Wilcox et al. 2000) and cannot be used by women (around 27%) whose menstrual cycle is irregular (ie., more than 36 days long) (Maheshwari et al. 2008).

Summary and conclusion

This paper has provided an introduction and overview to fertility-awareness, and highlighted the importance of basing this critical education for women on mucus and temperature, not rhythm, to assist spontaneous conception. With appropriate education and resourcing, nurses and midwives could play a greater role in fertility-awareness education for women in general practice.

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