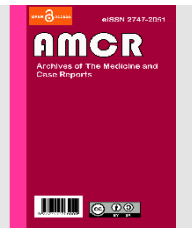




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## The Concept of Infertility in Women: A Narrative Literature Review

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### ABSTRACT

Infertility can be defined as a married couple who have not experienced pregnancy for one year, after having regular intercourse 2-3 times a week and without using any preventive methods. There are two types of infertility, namely primary infertility and secondary infertility. Primary infertility is when the wife has never been pregnant even though she has had intercourse without contraception and is faced with the possibility of pregnancy for twelve months. Secondary infertility is when the wife has been pregnant before, but then there is no further pregnancy even though she has had intercourse without contraception and is faced with the possibility of pregnancy for twelve months. Causes of infertility can be divided into three groups. One-third of related problems in women, one-third in men, and one-third are caused by a combination of factors. Infertility in women can be caused by problems with the vagina, cervix uteri, fallopian tubes, uterus, or ovaries. This literature review aimed to describe the definitions, types, and current management of infertility in women.

### 1. Introduction

Infertility is the inability to get pregnant after at least one year of having sex at least four times a week without contraception.<sup>1-3</sup> Infertility can also be defined as a married couple who have not experienced pregnancy for one year, after having regular intercourse 2-3 times a week and without using any preventive methods. Considering that age is a factor that greatly influences the success of treatment, women aged 35 years or over certainly don't have to wait for 1 year.<sup>4,5</sup> A minimum of six months is sufficient for patients with infertility problems to come to the doctor for basic examinations. This literature review aimed to describe the definitions, types, and current management of infertility in women.

#### Type of infertility

There are two types of infertility, namely primary infertility and secondary infertility. Primary infertility

is when the wife has never been pregnant even though she has had intercourse without contraception and is faced with the possibility of pregnancy for twelve months. Secondary infertility is when the wife has been pregnant before, but then there is no further pregnancy even though she has had intercourse without contraception and is faced with the possibility of pregnancy for twelve months.<sup>6,7</sup>

#### Causes of infertility in women

Causes of infertility can be divided into three groups.<sup>7</sup> One-third of related problems in women, one-third in men, and one-third are caused by a combination of factors. Infertility in women can be caused by problems with the vagina, cervix uteri, fallopian tubes, uterus, or ovaries. Vaginal infections such as vaginitis and severe trichomonas vaginalis will cause further infections in the portio, cervix, endometrium, and even the tubes, which can cause



movement disorders and blockages in the tubes as vital reproductive organs for conception to occur.<sup>8-11</sup> Sexual dysfunction in women that prevents penile penetration, such as vaginismus or dyspareunia and an extremely acidic vaginal environment, can significantly reduce sperm viability and lead to infertility.<sup>12,13</sup>

Problems with the cervix uteri include physiological changes that normally occur during the preovulatory and ovulatory periods that make the cervical environment conducive to sperm viability, such as increased alkalinity and increased secretion. Meanwhile, uterine problems include nidation to a fertilized ovum. The nidation process of the zygote cannot take place if there are abnormalities in the endometrium. These pathologies include endometrial polyps, adenomyosis, uterine myomas or leiomyomas, former curettage, and septic abortion. These abnormalities can interfere with the implantation, growth, nutrition, and oxygenation of the fetus.<sup>11</sup>

Female infertility can also be caused by problems with the fallopian tubes (ovum ducts). The fallopian tubes have a very vital function in the process of pregnancy. If there is a problem in the female reproductive tract, it can hinder the movement of the ovum to the uterus, prevent sperm from entering or inhibit implantation of the fertilized ovum. Blockage in the fallopian tube is one of the many causes of infertility. The blockage can result from infection, tubal surgery, or adhesions caused by endometriosis or inflammation. The most prominent of this tubal problems-related infertility is the increased incidence of pelvic inflammatory disease (PID). This PID causes scar tissue that blocks both fallopian tubes.<sup>14,15</sup>

Disturbances in the menstrual cycle can be a cause of infertility in women. A woman needs to have regular ovulatory cycles to become pregnant, her ovum must be normal, and there must be no obstruction in the passage of sperm or implantation of the fertilized ovum. In this case, ovarian problems can affect infertility, namely ovarian cysts or tumors, polycystic ovarian disease, endometriosis, or a history of surgery

that disrupts the ovarian cycle.<sup>16</sup> From a psychological perspective, there is also a correlation between hyperprolactinemia and high levels of stress among partners that affect hormone function.<sup>17</sup>

### **Causes of secondary infertility**

Problems in secondary infertility are closely related to problems in couples with primary infertility. Most couples with secondary infertility are caused by several factors, namely age, reproductive problems, and lifestyle factors. The age factor is very influential on the fertility of a woman. As long as the woman is still in her reproductive period, the possibility of pregnancy still exists. However, with age, the ability of the ovaries to produce ovum cells will decrease. Research shows that a woman's potential to get pregnant decreases after the age of 25, and pregnancy-related hormones decrease after the age of 38. Previous research stated that fertile women under 25 years of age have a 96% chance of getting pregnant within a year. Ages 25-34 years decreased to 86% and 78% at ages 35-44 years.<sup>1,6</sup>

Problems in the reproductive system can develop after the initial pregnancy. In fact, previous pregnancies sometimes cause reproductive problems that actually lead to secondary infertility. For example, in women who give birth by surgery, it can cause scarring that leads to blocked tubes. Other problems that also play a role in reproduction are irregular ovulation, disorders of the pituitary gland, and blockage of the sperm ducts. Changes to lifestyle can also impact a couple's ability to get pregnant or get pregnant again. Women who are overweight often experience ovulation disorders. Being overweight can affect the estrogen in your body and reduce your ability to get pregnant.<sup>8,10</sup>

### **Management of infertility in women**

Commonly used infertility treatments include ovulation induction, which refers to drug therapy to induce ovulation, and ovarian stimulation, which is carried out with the aim of inducing the maturity of



multiple ovarian follicles. Timed intercourse or intrauterine insemination (IUI) can be used to achieve fertilization at the time of ovulation. Another alternative is that mature oocyte can be taken directly from the ovary for fertilization using an ultrasound-guided needle (IVF).<sup>12</sup>

The drugs used for ovulation induction are clomiphene citrate and letrozole. Clomiphene citrate is a selective estrogen receptor modifier that blocks the negative feedback effect of circulating estradiol and causes an increase in hypothalamic gonadotropin-releasing hormone (GnRH) pulse rate and pituitary FSH. Increased production of luteinizing hormone (LH) will encourage the growth of ovarian follicles. Letrozole blocks aromatase reduces serum estradiol concentrations, and stimulates pituitary gonadotropins. Clomiphene citrate and aromatase inhibitors will drive the twin pregnancy rate to less than 10. In women with PCOS undergoing ovulation induction, letrozole is the first-line therapy. Letrozole resulted in a higher live birth rate compared to clomiphene citrate.<sup>2,16</sup>

This pharmacological therapy is less useful in women with hypogonadotropic hypogonadism, who may show limited or no endogenous pituitary gonadotropin response. The GnRH pulsatile frequency was adjusted to mimic physiological variations in GnRH pulse variability. Treatment with pulsatile GnRH resulted in a pregnancy rate of 93% to 100% after up to 6 months and was well tolerated, with no reported cases of severe ovarian hyperstimulation syndrome. Alternatively, exogenous gonadotropins can be used to stimulate ovarian follicles directly. In women with hypogonadotropic hypogonadism, intrinsic ovulatory dysfunction necessitates the use of exogenous ovulation triggers.<sup>16</sup>

## 2. Conclusion

Infertility can be defined as a married couple who have not experienced pregnancy for one year, after having regular intercourse 2-3 times a week and without using any preventive methods. Infertility in

women can be caused by problems with the vagina, cervix uteri, fallopian tubes, uterus, and ovaries.

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