



Review Article

REVIEW LITERATURE ON ASSISTED REPRODUCTIVE TECHNOLOGY

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ABSTRACT

One in six couples worldwide experience some form of infertility problem at least once during their reproductive lifetime. The current prevalence of infertility lasting for at least 12 months is estimated to be around 9% worldwide for women aged 20-44. 20-30% of infertility cases are explained by physiological causes in men, 20-35% by physiological causes in women, and 25-40% of cases are because of a problem in both partners. Fertility disorders are incredibly common. Falling pregnant actually involves a great deal of chance. The probability of a healthy fertile couple becoming pregnant is around 25% a month, but decreases, as a woman gets older. Infertility refers to an inability to conceive after having regular unprotected sex. Infertility can also refer to the biological inability of an individual to contribute to conception, or to a female who cannot carry a pregnancy to full term.

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INTRODUCTION

World scenario

One in six couples worldwide experience some form of infertility problem at least once during their reproductive lifetime. The current prevalence of infertility lasting for at least 12 months is estimated to be around 9% worldwide for women aged 20-44. 20-30% of infertility cases are explained by physiological causes in men, 20-35% by physiological causes in women, and 25-40% of cases are because of a problem in both partners. In 10-20% no cause is found. Infertility is also associated with lifestyle factors such as smoking, body-weight and stress. Increasing age in the female partner is one of the most common problem encountered in today's life. It is now estimated that more than 5 million babies have been born worldwide since the first IVF baby was born in 1978. Most ART treatments take place in women aged between 30 and 39.

Cycles/treatments around the world

Europe leads the world in ART, initiating approximately 55% of all reported ART cycles. In 2011, the latest year for which figures are available, 588,629 treatment cycles were reported from 33 European countries. This compares globally (in 2011) with 151,923 cycles from the US and 66,347 cycles from Australia and New Zealand. The number of cycles performed in many developed countries has grown by 5-10% per annum over the last few years, but that growth is now showing signs of slowing. In 2011 France (85,433 cycles), Germany (67,596), Italy (63,777), Russia (56,253), Spain (66,120) and the UK (59,807) were Europe's most active countries. In the Nordic countries, Sweden leads the table with 18,510 cycles, followed by Denmark (14,578). The most active countries in the world are Japan and the USA.

Availability of ART: statistical data worldwide

The Nordic countries and Belgium (but also Iceland and Slovenia) have the highest ART availability in terms of cycles per million population. In Belgium, the Czech Republic, Denmark, Estonia, Iceland, Norway, Slovenia and Sweden more than 3.0% of all babies born were conceived by ART. By contrast the proportion in the USA - with 61,610 ART babies born - was estimated to be slightly more than 1% of total births. Around 1.5 million ART cycles are performed each year worldwide, with an estimated 350,000 babies born.

Pregnancies and delivery rates

An analysis of world data for 2006 put average delivery rate from ART treatment at 20.5% per aspiration and 25.2% cumulative from a single started treatment cycle. Large differences exist between countries in the number of embryos transferred and resulting multiple births. However, there is a consistent trend towards transfer of fewer embryos. The overall average number is 1.75 embryos per transfer. In Europe the multiple delivery rate has declined steadily since 2000 from 26.9% to 19.4% in 2011 compared to a multiple delivery rate of 30% in the US (27.5% twin, 2.5% triplet or more deliveries). Sweden has the lowest multiple delivery rate in the world. In 74.7% of all cases a single embryo was transferred. In Europe in 2011 the mean pregnancy rate per embryo transfer was 33.2% after IVF, 31.6% after ICSI, 23.4% after frozen embryo transfer and 47.5% after egg donation. Rates are higher in younger (<35 years) patients.

Treatments

The most common fertilisation (treatment) technique is ICSI. Overall, ICSI accounts for around two-thirds of all treatments worldwide, and conventional IVF around one-third. However, these proportions vary greatly between countries, even though

outcome rates with each technique are comparable. Success rates from frozen embryo transfer are increasing, as are the number of FER cycles. Vitrification, as an efficient cryopreservation technique, has improved the outcome of both embryo and oocyte freezing. Ovarian hyperstimulation syndrome (OHSS) is a complication related to ART. In 2011 there were 1683 OHSS cases recorded in 28 out of 33 European countries reporting to ESHRE, making up 0.6% of cycles. Russia (520), Italy (189) and Spain (184) reported the highest number of patients with OHSS.

Infertility

Fertility disorders are incredibly common. Falling pregnant actually involves a great deal of chance. The probability of a healthy fertile couple becoming pregnant is around 25% a month, but decreases, as a woman gets older. For couples with reduced fertility, the monthly probability is smaller. Reduced fertility is referred to as “sub-fertility” in medical jargon. (The term infertility is reserved for couples for whom there is no chance of a spontaneous pregnancy.) A distinction is drawn between couples who have never achieved a pregnancy together (so called “primary” sub-fertility), and couples who have previously conceived together but have not succeeded subsequently (“secondary” sub-fertility). Secondary sub-fertility includes couples with one or more children as well as couples who have experienced a past miscarriage.

Infertility refers to an inability to conceive after having regular unprotected sex. Infertility can also refer to the biological inability of an individual to contribute to conception, or to a female who cannot carry a pregnancy to full term.

A WHO study, published at the end of 2012, has shown that the overall burden of infertility in women from 190 countries has remained similar in estimated levels and trends from 1990 to 2010.

Indian scenario

For women younger than 35 years, sub-fertility is defined as the lack of conception over a period of 12 months or more during which unprotected intercourse has occurred. For women over the age of 35 years, the time period used to define sub-fertility is reduced to 6 months. Women who experience irregular menstruation or periods - which may point to problems with ovulation (egg release) - are generally advised to consider evaluation and treatment earlier. In India, 13-19 million couples of reproductive age are infertile as per WHO estimate. In general, reduced fertility occurs in approximately 1 in 10 couples. Reduced fertility is not more common in people of a specific race or ethnic origin.

Treatments for infertility

This will depend on many factors, including the age of the patient(s), how long they have been infertile, personal preferences, and their general state of health. Even if the woman has causes that cannot be corrected, she may still become pregnant.

CONCLUSION

Infertility treatment helps the female and male to be productive after treating the underlying cause. Treatment may depend on the cause and factors affecting them.

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