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MALE AND FEMALE INFERTILITY

Introduction

Despite a high fertility rate in Pakistan, approximately 21.9 percent of couples in the country suffer from infertility.

Infertility is considered primarily a women's problem, and the role that men play in conception is often overlooked. Infertility thus creates psychological, emotional, and social problems for women because they are blamed for not being able to produce children, whereas men are often ready to marry again without seeking medical attention for the causes of possible male infertility.

Infertility is a highly sensitive problem for couples. They may be helped to conceive through counselling/education, diagnosis, and correct guidance for treatment. A proper evaluation can avert much unhappiness, family crises and, in many cases, a marital breakup. This task can be performed by health care providers in the community who can assist in diagnosis, education, and counselling and provide guidance. They should also refer cases of sexual dysfunction, which may be age-related, and are influenced by health and psychosocial factors.

Health care providers should be able to:

- Give the couple moral support and encouragement.
- Counsel couples about infertility.
- Educate couples about possible causes of infertility.
- Take a proper history.
- Do a thorough physical examination.
- Refer couples to infertility centres or specialists.

Role and Responsibilities of Family Planning Services

The evaluation of infertility is directed mainly to the couple but also involves the family and the community. Given the many factors that affect normal fertility, it is important to reassure the couple and manage the expectations of the couple and their families about the many challenges of planning a family and having children.

During the initial evaluation of infertility, it is very important to perform the evaluation of the couple together so they can better understand the important concepts of fertility and fecundability.[1] Counselling should focus on personal and environmental factors that can affect the couple's fertility. Health services must acknowledge the pressure from families and communities to have children. They should also emphasize the need for support from families and the community, especially if infertility is confirmed and further evaluation and treatment need to be performed at a specialized medical centre.

Definitions

Infertility/Fecundity: Failure of a couple to become pregnant after 12 months of regular intercourse without use of contraception.

Secondary Infertility: Failure of a couple to become pregnant after 12 months of regular intercourse without use of contraception among couples who have had a previous pregnancy. Couples wherein either the male or female partner has undergone permanent sterilization, either vasectomy or tubal ligation, are included in this category.

Fertility

Normally, fertile couples who have sexual intercourse without contraception during the fertile period have about a 20 percent chance of conception in each menstrual cycle (fecundability). In each cycle, sexual intercourse during the fertile period and good semen quality improve the chance of becoming pregnant. The fertile period takes place approximately 5–6 days before ovulation, up to the day of ovulation. The greatest chance of becoming pregnant occurs when intercourse happens 1–2 days before ovulation. The quality of semen improves after 2–3 days of absent ejaculation or abstinence. Regular intercourse (approximately two or three times per week) beginning soon after the menstrual period stops increases the chance of becoming pregnant. However, as the time period without becoming pregnant increases, fecundability in the next menstrual cycle decreases.

Fecundability depends on other important factors, including maternal and paternal ages. For example, the chance of becoming pregnant in each age range

[1] Fecundability: Probability of becoming pregnant in a single menstrual cycle.

is shown below (Table 17-1). Couples should consider their ages in planning when to become pregnant and have children.

Table 17-1. Chances of Pregnancy Based on Maternal and Paternal Ages

Age of Female Partner	Age of Male Partner	Chance of Pregnancy
19-26 years	Same age as female partner	50%
27-34 years	Same age as female partner	40%
35-39 years	Same age as female partner	30%
19-26 years	5 years older than female partner	45%
27-34 years	5 years older than female partner	40%
35-39 years	5 years older than female partner	15%

Infertile couples who eventually become pregnant are not more likely to experience miscarriage or stillbirth compared to fertile couples of the same age.

Causes of Infertility

- Unexplained: no identifiable cause (28 percent)
- Male factor (23 percent):
  - Low sperm quality (sperm count, motility, morphology)
  - Hormone abnormalities due to disease or medications that affect the hypothalamus or pituitary gland
  - Disorders of male reproductive organs:
    - Genetic/chromosome abnormalities
    - Cryptorchidism (failure of testicular descent during foetal development)
    - Testicular cancer
    - Varicocele (dilation of veins in the scrotum)
    - Defect in specific hormones and hormone receptors
    - Exposure to tobacco (smoking), infection, specific medications, environmental hazards, and toxins
  - Previous vasectomy (in cases of secondary infertility)
- Female factor (44 percent):
  - Decreased or absent ovulation
  - Pelvic adhesions (due to pelvic inflammatory disease, previous abdominal or pelvic surgery, abdominal or pelvic infections such as appendicitis or pelvic tuberculosis)
  - Abnormalities of female reproductive organs:
    - Endometriosis

    - Uterine fibroids and other uterine abnormalities such as uterine septum
    - Blockage of fallopian tubes
    - Cervical infection and narrowing of the cervix due to cancer or previous surgery
  - High prolactin hormone level
  - Previous tubal sterilization (in cases of secondary infertility)
- Coital factor: interaction of sperm and cervical mucus (5 percent):
  - Antibodies to sperm

Risk Factors in Both Male and Female Partners

- Older age
- Smoking
- Heavy alcohol use
- Stress
- Infection of reproductive organs, including sexually transmitted infections (STIs)
- Surgery to abdomen and reproductive organs
- Exposure to environmental hazards and toxins including radiation, pesticides, lead, and mercury

Risk Factors in Female Partners

- Oligomenorrhoea (> 6 weeks between each menstrual cycle) or amenorrhoea (absence of menarche by age 16 or absence of menses for more than 6 months in women who were previously menstruating), which leads to decreased or absent ovulation
- Overweight or underweight: optimal BMI is 18.5–25 kg/m2 (approximately 50–60 kg for women who are 1.6 meters tall)
- Too much caffeine intake: approximately more than 10 cups of tea or 2 cups of coffee per day
- Too much exercise
- Eating disorders

Initial Approach to an Infertile Couple at the Family Planning Clinic

Couples should be evaluated for infertility together after 12 months of unsuccessful conception despite regular intercourse. Couples over age 35 should be evaluated after 6 months.

Counselling should emphasize normal fertility, including the fertile period, causes of infertility, and ways to improve chances of conception in each menstrual cycle. Couples who continue to have difficulty becoming pregnant should then be evaluated by a trained physician.

Initial Recommendations/Prevention of Infertility

- Have regular intercourse during the fertile period.
- Plan to start having children before 35 years old, if possible.
- Improve body weight.
- Minimize stress.
- Stop smoking.
- Decrease or stop alcohol use.
- Decrease caffeine intake.
- Eliminate exposure to environmental hazards and toxins.
- Avoid exposure to STIs by using condoms and limiting the number of sexual partners.

Secondary Evaluation of an Infertile Couple

The next step in the evaluation of infertility should include a complete medical history and physical examination. This evaluation identifies risk factors that affect the couple and can provide important information about recommendations to increase the couple's chance of becoming pregnant. Men who have had children with a different female partner are less likely to have infertility due to male factors.

The following screening tests may be helpful during the medical evaluation:

- STIs (both male and female partners)
- Polycystic ovarian syndrome (PCOS) (female partner): Polycystic ovary syndrome is a disorder in women characterized by decreased or absent ovulation and increased androgen hormone level (increased hair growth, acne, male pattern balding) with no other known causes for these conditions. Abnormalities in cholesterol levels and insulin resistance (for example, diabetes) are common in women with PCOS.)

- Thyroid disease (female partner): Thyroid disease may cause an increase in prolactin hormone level that can affect ovulation.

Goals of the Medical Evaluation of an Infertile Couple

- Obtain complete medical history of both male and female partners with the following key elements (see Table 17-2).
- Perform physical examination with the following key elements:
  - Male:
    - Confirm appropriate development of male anatomy
    - Assess presence of surgical scars
  - Female:
    - Measure vital signs including height, weight, blood pressure
    - Confirm appropriate development of female anatomy
    - Assess hair growth and pattern, acne (to evaluate potential diagnosis for PCOS)
    - Assess presence of surgical scars
- If infertility is diagnosed based on the couple's history, discuss the following potential concerns:
  - What does infertility mean?
  - What are the potential causes of infertility? Do any of these causes affect the couple?
  - Is there a need for further evaluation? If yes, what additional tests are needed? Should the couple be referred to a specialized medical centre?
  - What are the treatment options? Should the couple be referred to a specialized medical centre?
  - What recommendations can be made at the end of the initial visit? (See "Initial Recommendations/Prevention of Infertility" above.)
- Discuss expectations about chances of successful conception and future pregnancies (if known based on history and examination).
- Provide reassurance regarding the diagnosis and plan of care. Empower the couple by emphasizing what they can do as a next step.

Table 17-2. Key Elements of Medical History to Evaluate a Couple for Infertility

	Components of Medical History
Couple	• Do you have any children together? Have you experienced any pregnancy loss, such as miscarriage? • How long have you been attempting to conceive? • How often do you have sexual intercourse?
Male	• Medical history: – Do you have any medical problems? – Do you take any medications? • Surgical history: – Did you ever undergo a vasectomy? • Family history: – Is there anyone in the family born with chromosome abnormalities (such as Down syndrome) and congenital anomalies? • Sexual history: – Have you fathered a pregnancy? If yes, were these pregnancies with your current partner? What were the outcomes of these pregnancies (live birth, miscarriage, ectopic, induced abortion)? – How many sexual partners do you have currently? Number of previous sexual partners? – Do you have any history of sexually transmitted infections? If yes, when? Were you treated for these infections? • Social history: – Do you smoke? If yes, how much?

	Components of Medical History
Female	• Medical history: – Do you have any medical problems? High cholesterol level, high blood pressure, or heart disease? Diabetes? Thyroid disease? – Do you take any medications? • Surgical history: – Did you ever undergo a tubal ligation? – Have you ever had any surgery in your abdomen or vagina? • Family history: – Is there anyone in the family born with chromosome abnormalities (such as Down syndrome) and congenital anomalies? • Obstetric history: – How many times have you been pregnant? – Do you have any children? – Have you experienced any miscarriages, ectopic pregnancies, or induced abortions? How many? How far along was your pregnancy? – Is your current male partner the father of each of your pregnancies? • Gynaecologic history: – How old were you when you began having periods? How often (per month, per year)? Can you predict when your menstrual cycle will begin? – Do you have any history of abnormal Pap smear? If yes, what treatment(s) did you receive? – How many sexual partners do you have currently? Number of previous sexual partners? – Do you have any history of sexually transmitted infections? If yes, when? Were you treated for these infections? • Social history: – Do you smoke? If yes, how much? – Do you drink alcohol? If yes, how much? – Do you drink tea, coffee, or other caffeinated drinks? If yes, how much?

Follow-Up

Depending on availability of resources at the local health centre, follow-up may include the following evaluation at a specialized medical centre:

- Semen analysis:
  - A standard semen analysis to evaluate semen quality studies a semen sample that is collected after 2–7 days of abstinence and submitted to a special laboratory within 1 hour of collection. If a low sperm count is found, genetic studies of the male partner may be helpful.
- Assessment of uterus and fallopian tubes:

- Radiologic studies or surgery may be performed to evaluate the female partner's pelvic anatomy to identify potential causes of infertility.

- Assessment of ovulation:
  - Special serum laboratory studies may help in the evaluation of ovarian function.

Treatment Options

- Provision of education and counseling about the fertile days in the menstrual cycle.
- Treatment of medical conditions, including infections, that may affect the couple's fertility
- Surgery for treatment of endometriosis or diseases affecting male and female reproductive organs
- Treatment for decreased or absent ovulation that may include hormone medications
- Assisted reproductive technologies such as in vitro fertilization