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PRIMARY INFERTILITY CAUSES IN WOMEN MARRYING AT AN EARLY AGE: A MODERN MEDICAL AND SOCIAL ANALYSIS

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Abstract: This scientific article analyzes the etiological, pathogenetic, clinical, and social aspects of primary infertility among women who marry at an early age. Biological immaturity of the reproductive system, endocrine disorders, sexually transmitted infections, psychoemotional stress, nutritional deficiencies, and social factors are identified as the major causes of infertility. Statistical data from the World Health Organization (WHO), UNICEF, and international reproductive health studies were used to evaluate the impact of early marriage on female reproductive health. Modern diagnostic approaches, treatment principles, and preventive measures are also discussed.

Keywords: early marriage, primary infertility, reproductive health, endocrine disorders, infertility, sexually transmitted infections, psychoemotional stress, reproductive age.

Introduction:

Today, the preservation of reproductive health is considered one of the priority areas of global medicine. Disorders of reproductive function in women are not only a medical issue but also an important demographic and social problem. In particular, reproductive complications associated with early marriage remain highly relevant in many developing countries.

According to the World Health Organization, approximately 12 million girls worldwide marry before the age of 18 every year. The prevalence of child marriage remains particularly high in South Asia, Africa, and some Central Asian regions. UNICEF statistics indicate that:

43% of girls in Nigeria;
51% in Bangladesh;
27% in India;
approximately 15–20% in certain Central Asian areas marry before the age of 18.

Early marriage significantly increases the risk of:

primary infertility;
spontaneous abortion;
preterm labor;
uterine pathology;
endocrine disorders;
maternal complications.

Primary infertility is defined as the inability to achieve pregnancy after 12 months of regular unprotected sexual intercourse. Globally, infertility affects approximately 10–15% of reproductive-aged couples, and female factors account for nearly 55–60% of cases.

Recent studies demonstrate that women who marry at an early age have a 1.5–2.3 times higher risk of infertility compared to women who marry during mature reproductive age.

Relevance of the Study:

The relevance of this topic is determined by several important factors:

Increasing prevalence of early marriage;
Growing incidence of reproductive disorders;
Negative effects on women's health and demographic indicators;
Decline in fertility rates;
Psychological and family-related complications.
According to WHO reports, among infertility cases worldwide:
30–35% are associated with endocrine factors;
25–30% with infectious diseases;
15–20% with psychoemotional factors.

Physiological Maturation of the Reproductive System:

The complete maturation of the female reproductive system generally occurs between 18 and 20 years of age. During adolescence, the following systems continue to develop morphologically and functionally:
hypothalamic-pituitary axis;
ovaries;
uterus;
endometrium.
Early marriage negatively affects these physiological maturation processes.

Major reproductive abnormalities observed in adolescent girls:

Pathological condition
Anovulatory cycles - 45–60%
Menstrual dysfunction - 35–40%
Hormonal imbalance -30–45%
Uterine hypoplasia- 18–25%
These findings indicate insufficient reproductive maturation in young females.

Main Causes of Primary Infertility:

1. Endocrine and Hormonal Disorders

In adolescent girls, ovarian activity has not yet reached full stability. Consequently, the following pathological conditions may develop:
Polycystic Ovary Syndrome (PCOS);
luteal phase deficiency;
hyperprolactinemia;
hypothalamic amenorrhea.
PCOS is found in approximately 20–30% of infertile women. Studies suggest that the prevalence of PCOS is higher among women who marry early.
Pathogenesis
Stress and hormonal imbalance lead to:
increased luteinizing hormone (LH) secretion;
decreased follicle-stimulating hormone (FSH);
impaired follicular maturation;
absence of ovulation.
As a result, anovulatory infertility develops.

2. Sexually Transmitted Infections (STIs)

According to WHO data, more than one million new STI cases occur globally every day.
Women marrying at an early age are more vulnerable to:
chlamydia;
gonorrhea;
ureaplasmosis;

mycoplasmosis;
trichomoniasis.
Statistical indicators
Infection type
Chlamydia 35–40%
Gonorrhea 20–25%
Chronic salpingitis 45%
Endometritis 15–20%
Chronic inflammatory diseases often lead to fallopian tube obstruction, resulting in:
impaired ovum transport;
implantation failure;
tubal-peritoneal infertility.

3. Psychoemotional Factors

Early marriage often occurs without adequate psychological preparation. Family pressure, economic difficulties, and social adaptation problems contribute to chronic stress.
Effects of stress on the reproductive system
Elevated cortisol and prolactin levels may:
suppress GnRH secretion;
impair ovulation;
disrupt the menstrual cycle.
Research indicates that women experiencing chronic stress have a 25–30% lower probability of conception.

4. Anatomical Immaturity

Females under 18 years of age may exhibit:
reduced uterine size;
thin endometrium;
cervical insufficiency.
Statistical data
Anatomical condition
Uterine hypoplasia 20–25%
Immature endometrium 15–18%
Cervical pathology 10–12%
These conditions negatively affect embryo implantation.

5. Nutritional and Metabolic Disorders

WHO reports indicate that iron-deficiency anemia affects up to 40% of reproductive-aged women worldwide.
Young married women frequently suffer from:
protein deficiency;
hypovitaminosis;
vitamin D deficiency;
folate deficiency.

Effects of anemia:

Reduced hemoglobin levels cause ovarian hypoxia and impair ovulatory function.
Studies show that women with iron-deficiency anemia have a 1.4–1.8 times higher risk of infertility.

6. Social Factors

Several social determinants also contribute to infertility:
low medical literacy;

poor socioeconomic conditions;
lack of gynecological examinations;
insufficient sexual education.
UNICEF reports demonstrate that early marriage rates are 2–3 times higher in populations with lower educational levels.

Diagnostic Approaches:
The diagnosis of primary infertility includes:
Laboratory investigations:
FSH;
LH;
prolactin;
AMH;
progesterone;
estrogen levels.
Instrumental examinations:
ultrasonography (US);
hysterosalpingography;
laparoscopy;
folliculometry.
Infectious screening:
TORCH screening;
PCR diagnostics;
STI testing.

Treatment Principles:
Treatment strategies depend on the underlying etiological factors.
Hormonal therapy:
clomiphene citrate;
gonadotropins;
progesterone preparations.
Antibacterial therapy:
Antibiotic treatment is required in cases of STIs.
Surgical treatment:
laparoscopic adhesiolysis;
tuboplasty;
ovarian cyst resection.
Assisted reproductive technologies:
In severe infertility cases:
IVF;
ICSI;
intrauterine insemination
may be applied.
WHO statistics indicate that the average success rate of IVF is approximately 35–45%.

Prevention:
Preventive measures for primary infertility include:
Prevention of early marriage;
Reproductive health education;
Regular gynecological examinations;
Early diagnosis and treatment of STIs;

Psychological counseling services;
Promotion of balanced nutrition.

Conclusion:

In conclusion, primary infertility among women who marry at an early age represents a serious multifactorial medical and social problem that negatively affects reproductive health, family stability, demographic indicators, and quality of life. The findings of this study demonstrate that early marriage is closely associated with biological immaturity of the reproductive system, endocrine dysfunction, sexually transmitted infections, psychoemotional stress, nutritional deficiencies, and inadequate reproductive health awareness.

One of the major pathogenetic mechanisms underlying infertility in young women is the incomplete maturation of the hypothalamic-pituitary-ovarian axis. Hormonal instability during adolescence leads to menstrual irregularities, anovulatory cycles, and impaired follicular development, all of which significantly reduce fertility potential. In addition, chronic inflammatory diseases caused by untreated sexually transmitted infections contribute to tubal obstruction, pelvic adhesions, and implantation failure, thereby increasing the risk of irreversible infertility.

The study also highlights the substantial role of psychoemotional and social factors in the development of reproductive dysfunction. Young women who enter marriage prematurely often experience psychological stress, emotional instability, domestic pressure, and socioeconomic difficulties. These factors negatively influence neuroendocrine regulation and may suppress ovulation through increased cortisol and prolactin secretion. Consequently, infertility should not be considered solely a gynecological condition, but rather a complex biopsychosocial disorder requiring multidisciplinary management.

Statistical analyses from international organizations such as WHO and UNICEF indicate that early marriage remains highly prevalent in developing countries and is strongly correlated with adverse reproductive outcomes. Women who marry before the age of 18 demonstrate significantly higher rates of endocrine disorders, pelvic inflammatory disease, spontaneous abortion, and infertility compared to women who marry at physiologically mature reproductive age. Furthermore, limited access to healthcare services, insufficient sexual education, and low medical literacy worsen the problem and delay early diagnosis and treatment.

Another important aspect is the long-term demographic and public health impact of infertility associated with early marriage. Increasing infertility rates may contribute to declining birth rates, psychological trauma within families, marital instability, and reduced social wellbeing. Therefore, addressing this issue requires not only medical intervention but also comprehensive social, educational, and governmental strategies.

Preventive measures should primarily focus on reducing the prevalence of early marriage through public awareness campaigns, improvement of female education, strengthening reproductive health programs, and promoting regular gynecological screening among adolescents and young women. Early diagnosis and timely treatment of endocrine disorders and sexually transmitted infections are essential for preserving fertility potential. In addition, psychological counseling and nutritional support should be integrated into reproductive healthcare services for young women.

Modern reproductive technologies, including assisted reproductive techniques such as IVF and ICSI, provide promising opportunities for infertility treatment; however, prevention remains the most effective and economically beneficial strategy. Healthcare systems should prioritize reproductive education programs aimed at adolescents, families, and communities in order to improve awareness regarding the consequences of early marriage and reproductive health complications.

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