KFOG

PRESENTS

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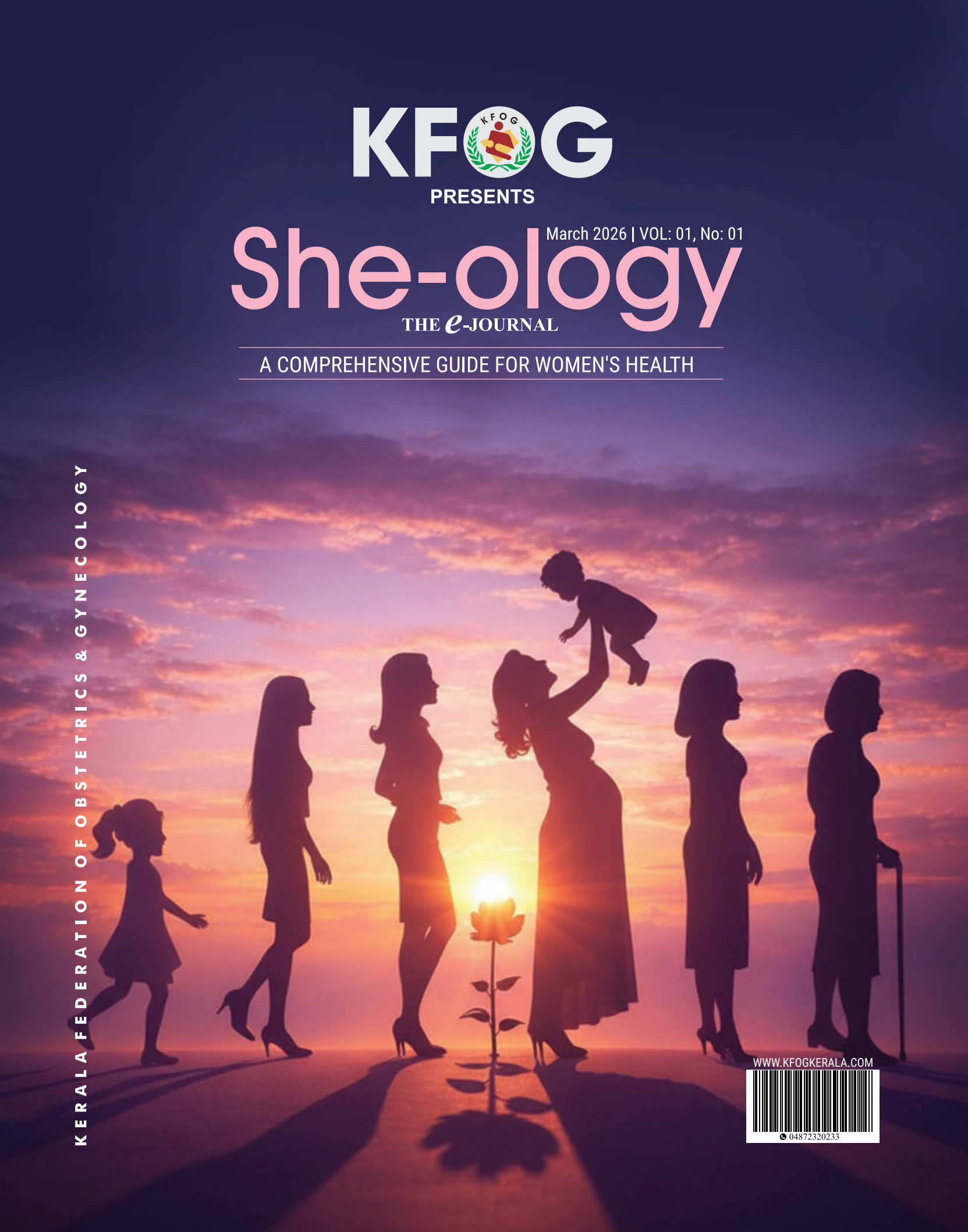
She-ology

THE e-JOURNAL

A COMPREHENSIVE GUIDE FOR WOMEN'S HEALTH



KERALA FEDERATION OF OBSTETRICS & GYNECOLOGY

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KFOG
PRESENTS
She-ology
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A COMPREHENSIVE GUIDE FOR WOMEN'S HEALTH

CONTENTS

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PRESIDENT'S
Message

Dr Fessy Louis T
President,
KFOG 2026-27

It gives me immense joy and a deep sense of purpose to pen this message for the inaugural edition of She-ology, our new e-journal dedicated to advancing knowledge, promoting inquiry, and celebrating academic curiosity in the field of Obstetrics and Gynecology. This launch marks an important milestone not only for our federation but also for the vibrant academic community across Kerala that has always strived to elevate women's health with commitment and compassion.

As President of KFOG, I believe strongly that the strength of our specialty lies in its constant evolution. Every guideline we follow today, every best practice we rely on, is built on decades of research, critical questioning, and evidence generated by clinicians and scholars like you. Our postgraduates, who represent the brightest and most dynamic segment of our fraternity; play a central role in continuing this tradition. Your questions, your data, your curiosity, and your willingness to challenge existing norms are what will shape the next era of clinical practice.

She-ology has been conceived as a platform where this energy can be nurtured, documented, and showcased. This e-journal also aims to provide a supportive, credible, and accessible avenue for young clinicians and researchers to publish their work in the future editions. It can be original research, case series, clinical audits, reviews, or innovative practice-based observations In the digital age, knowledge travels fast; your contributions have the power to reach colleagues across the state and beyond, influencing practice patterns and inspiring further inquiry.

I want to speak directly to our postgraduate students: Research is not an additional burden; it is a tool that sharpens your thinking, strengthens your clinical judgement, and builds your professional identity. Your thesis need not be seen as a formality—it is often your first opportunity to bring your own voice into the scientific community. Publishing your work transforms effort into impact. It ensures that your insights contribute to the collective progress of our field. And above all, it builds confidence: confidence to ask better questions, to design better studies, and to become leaders in evidence-based care. So hoping to see more young consultants and post graduates contribute to this Journal version in future.

I encourage each one of you to take the step from "doing research" to sharing research. Let She-ology be your starting point. Engage with mentors, collaborate with peers, refine your methodology, and never hesitate to seek guidance. The editorial team lead by Dr Sangeetha D G, is committed to supporting you throughout the process. High-quality, ethical, and clinically relevant research will always find its place, and we are determined to give it the visibility it deserves.

As we unveil this first edition, I extend my heartfelt appreciation to the editor Dr Sangeetha D G, contributors, and mentors whose dedication has made this initiative a reality. May She-ology grow into a vibrant academic space that reflects the scientific spirit of Kerala and nurtures generations of confident, research-driven obstetricians and gynecologists.

Warm regards,
Prof. Dr Fessy Louis T

SECRETARY'S
Message

Dr Subhash Mallya
President,
Secretary, KFOG

It gives me great pleasure to introduce the first series of KFOG e-journal, She-OLOGY a thoughtful compilation of articles addressing key areas in contemporary obstetrics and gynaecology.

The selected topics reflect both clinical relevance and academic depth, spanning adolescent health, oncology, fetal medicine, family medicine, medicolegal issues, and maternal care. I place on record my sincere appreciation to Dr. Sangeetha D G, our Editor, for her dedication, meticulous effort, and vision in bringing out this excellent e-journal.

I also thank all chairpersons and authors for their valuable contributions and support. I am confident this edition will greatly enrich our academic pursuits and promote continuous medical education.

Dr. Subhash Mallya
Secretary, KFOG

EDITOR'S Note

It gives me immense pleasure to present before you all the KFOG E journal, She -OLOGY
A comprehensive guide for women's health.
The intent behind is to span through different dimensions in a life cycle of woman.In this first issue we have designed articles authored by our KFOG chairpersons encompassing Adolescent, Oncology, Maternal Disorders in Pregnancy, Medico legal, Family Medicine, Fetal Medicine and Academic committees. Added on we have a special article penned down by immediate past President KFOG Dr Suchitra Sudhir on the woman's day theme of the year Give to Gain.

I sincerely appreciate the contributors for this issue and the President, Dr Fessy Louis T and Secretary KFOG, Dr Subash Mallya for the constant support extended in bringing out this version. I hope this edition serves as a valuable resource to practitioners and post graduates with its academically rich and clinically relevant content.

This edition also has made an attempt to introduce all the office bearers of KFOG and individual societies to our KFOG members across the state. We are all working with the same intent and goal. Let us all continue to strive towards comprehensive and respectful care for every woman at every age and stage of life. Happy reading .

Dr. Sangeetha D G
Editor,
KFOG Journal

OPTIMISING CARDIOVASCULAR HEALTH IN PREGNANCY : STRATEGIES

Dr Thanku Thomas
Chairperson:
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Cardiac disease continues to be one of the leading causes of maternal morbidity and mortality in Kerala as evident from the statistical data of CRMD. Aetiologically, Rheumatic valvular heart disease is slowly giving way to congenital cardiac disease, peripartum cardiomy opathyand in the recent years, coronary artery disease,a reflection of the trend of delayed childbearing and sedentary lifestyle. The need to implement strategies to improve the cardiac health status of the obstetric population cannot be over emphasised.

THE PRESENT CARDIO-OBSTETRIC SCENARIO

Taking a quick review through the causes of deaths due to cardiac disease in pregnancy in Kerala, Rheumatic heart disease is leading with mitral valve being the most frequently affected. This is followed by congenital heart disease with Eisenmenger syndrome, peripartum cardiomyopathy, primary pulmonary hypertension, myocarditis, aortic dissection and acute coronary artery syndrome as the other causes in order of their frequency.

The following strategies can be implemented to address the concern of maternal morbidity and mortality due to heart disease in pregnancy

1.PRECONCEPTIONAL COUNSELLING

Every woman anticipating pregnancy should undergo a basic cardiac evaluation along with their pre-conceptional counselling. A cardiac illness may be identified for the first time.Risk stratification of women with known cardiac disease can be done with tools such as modified WHO maternal cardiovascular risk stratification. If pregnancy is unsafe as in WHO class III and IV, this can be explained and effective contraception can be implemented and alternate methods of child bearing can be advised. Valve replacement or percutaneous balloon mitral commissurotomy (PMBC) can be done before a pregnancy. Closure of a hemodynamically significant septal defect can be performed. Cardiac medications can be optimised and teratogenic drugs if any can be replaced by non teratogenic drugs.

2.EARLY ANTENATAL CARE

A proper history taking and auscultation of chest to hear the heart sounds and murmurs if any, should be a mandatory step of the first booking visit.A column should be dedicated for the heart in the antenatal chart ofevery hospital. The pulse rate & SpO2 & BP should be recorded. Symptoms like dyspnoea, palpitation, syncope and chest pain should be asked for. Any deviation of these vital parameters from normal should trigger a cardiac consultation. ECG and Echocardiography are safe tools for evaluation.

Antenatal women with known cardiac disease should be evaluated by a cardiologist. History of the illness and details of any medication or intervention should be obtained. Those patients with mechanical prosthetic cardiac valves who are on warfarin can be switched to LMWH from 6 to 12 weeks. A percutaneous balloon mitral commissurotomy (PMBC) can be planned at 20 weeks.

Risk stratification of these patients can be done by the modified WHO classification.CARPREG and ZAHARA are the other tools available to assess the risk. Women belonging to WHO class IV carry a very high risk, and they can be advised medical termination of pregnancy in a tertiary centre as even abortion is associated with a risk for cardiac decompensation.

3. MANAGEMENT OF THE CARDIAC PATIENT IN PREGNANCY

Antenatal women with a diagnosed heart disease should be managed in a dedicated cardio-obstetric clinic /high risk clinic in a tertiary centre.

The frequency of antenatal visits should be tailored according to the severity of the disease.WHO class III and IV patients should be admitted and cared for with a multidisciplinary approach involving the cardiologist, intensivist, anaesthetist and neonatologist. The functional state (NYHA) class should be assessed in each visit and escalated or deescalated accordingly. Heart rate, BP, weight gain should be assessed and signs of cardiac failure or arrhythmias looked into.

The predictors of adverse maternal cardiovascular events during pregnancy should be noted, like Class III or IV either on NYHA or modified WHO risk stratification, previous heart failure, transient ischemic attacks, arrhythmias, cyanosisetc.

4.UNIVERSAL ECHOCARDIOGRAPHIC SCREENING IN ALL GRAVIDAS…??

In view of the status of cardiac disease as a major killer of mothers and the social and legal implications of sudden catastrophes like peripartum cardiomyopathy, and the tendency of the woman to conceal a heart disease, many obstetricians in Kerala are now advocating a screening echo for all pregnant women.Some opt for a single echo at 32-34 weeks. Some opt for an echo in the early pregnancy to diagnose congenital and valvular disease and a second echo at 34 weeks to screen for cardiomyopathy and other diseases. Studies do not support a routine echo for all. This is not technically feasible too. However due to the gross similarity between cardiac symptoms and the signs and symptoms of pregnancy,the threshold for a cardiac evaluation and echocardiography should be kept low.

5. MANAGEMENT OF LABOUR IN A CARDIAC PATIENT

A mother with higher risk cardiac disease should always deliver in a tertiary centre with facility for cardio obstetric care since labour is always associated with acute hemodynamic changes which may result in marked decompensation.

Ideally, spontaneous onset of labour and a vaginal delivery is preferred in a cardiac patient.Indication for caesarean is obstetric alone. Mechanical induction like Foley's catheter is preferred to prostaglandins as the latter can be absorbed into the systemic circulation and lower the heart rate and BP. A daytime induction is preferred when senior medical personnel is available. Adequate analgesia should be ensured as pain can activate the sympathetic pathway which can cause tachycardia and cardiac failure. Lumbar epidural analgesia with opioids can be used safely. Regional analgesia can cause hypotension which can be harmful.Partogram should be charted. Continuous electronic fetal heart monitoring should be done.Strict aseptic precautions should be maintained in all the procedures. Avoid

a prolonged labour and keep the threshold for C.S low.Avoid maternal pushing, instead the uterine contraction should descend the fetal head on to the perineum. Monitor carefully for the signs and symptoms of cardiac failure.Cut short the second stage of labour with forceps or vacuum.

6.POST PARTUM MANAGEMENT

Carefully monitored administration of frusemide is advocated immediately after delivery to reduce the pulmonary congestion due to auto transfusion of the uterine blood into the general circulation. Oxytocin can be given as a slow I.V infusion of 2 U/min to prevent uterine atony. Methylergometrin injection usage is guided by risk vs benefit ratio. PGE1 can be used. PG F2alpha can be used if the pulmonary artery pressure is normal.

The mandatory 24-hour hemodynamic monitoring in the ICU or labour room to watch for the onset of pulmonary oedema or cardiac failure should be followed.

Counsel regarding safe contraceptive measures. OC pill should be avoided.Progesterone only pill or intrauterine contraceptive devices can be promoted. Class I and II patients can undergo postpartum or interval sterilisation under close cardiac surveillance. Lactation should be promoted. The patient can be discharged when the cardiac condition is stable.

Avoid venous thromboembolism in the postpartum period by adequate hydration and early ambulation. Elastic stockings should be advised. Those patients with prosthetic mechanical cardiac valves who were on heparin can undergo bridging with warfarin in 3-5 days postpartum.

SUMMARY: STRATEGIES TO OPTIMISE THE CARDIOVASCULAR HEALTH OF THE PREGNANT WOMAN

- Early detection and management is the key principle in the management of the pregnant woman with heart disease.
- Every woman in the reproductive age group should have access to proper cardiac care facility with adequate infrastructure where early detection, risk stratification and optimal

treatment is possible. Lifestyle modification can be promoted to prevent acute coronary events. Awareness can be imparted via social media and health care points via pamphlets and awareness classes.

- Each obstetric clinic and labour room should be well equipped to manage catastrophes like peripartum cardiomyopathiesand acute coronary events.
- The international,national and local obstetric communities should formulate specific strategies for the prevention, diagnosis and management of heart disease in pregnancy.
- Apt pre-conceptional, early antenatal, antenatal, intrapartum and postpartum cardiac care should be the right of every woman with heart disease in our state, particularly in rural areas.
- Fetal echo in the evaluation of high-risk mothers can help identify congenital heart disease and correct it to optimise the cardiac status of the next generation mothers.
- Managing heart disease in pregnancy should be a part of the curriculum of training of the undergraduate and post graduate medical students and health care personnel like nurses and midwives. Continuing medical education tools of obstetrics should include heart disease in pregnancy mandatorily at regular intervals, to keep them updated .

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EMERGENCY CONTRACEPTION: BUSTING MYTHS AND ASSERTING FACTS

Dr. Rajina E.P

Chairperson: Family Planning Committee, KFOG.

Introduction

Emergency contraception (EC) is one of the most important yet underutilized interventions in reproductive healthcare. Although it has been available for decades with strong scientific evidence demonstrating both safety and effectiveness, misconceptions continue to limit its acceptance and use worldwide. In many societies, EC remains entangled in moral debates, confusion about its mechanism of action, and unfounded concerns about safety and long-term reproductive consequences.

These misunderstandings not only delay timely access but also contribute significantly to preventable unintended pregnancies, which remains a major public health challenge, associated with adverse maternal, neonatal, and socioeconomic outcomes. Improving understanding of emergency contraception is therefore not merely an academic concern—it is central to reproductive autonomy and public health progress.

What Is Emergency Contraception and its mechanism of action?

Emergency contraception refers to methods used to prevent pregnancy after unprotected sexual intercourse (UPSI) or contraceptive failure, but before implantation occurs and and must be used within a defined time window to maximize effectiveness.

It plays a critical role in situations such as condom breakage, missed oral contraceptive pills, sexual assault, incorrect use of contraception, or unexpected unprotected intercourse.

Medically and biologically, pregnancy begins at implantation, when a fertilized egg attaches to the uterine lining. Emergency contraception works prior to this event, making it a preventive—not abortive—intervention. This distinction is crucial in addressing many ethical and political misconceptions surrounding EC.

Emergency contraception methods fall into two primary categories:

- Intrauterine devices (IUDs)
- Oral medications

l Emergency Contraception

The two most widely used oral agents are:

- Levonorgestrel (LNG)
- Ulipristal acetate (UPA)

Both primarily function by preventing or delaying ovulation.

Levonorgestrel works by inhibiting or delaying the luteinizing hormone (LH) surge, thereby preventing follicular rupture and ovulation.

Ulipristal acetate, a selective progesterone receptor modulator, can delay ovulation even when the LH surge has already begun, making it more effective closer to ovulation.

Neither medication has been shown to interfere with implantation. Moreover, they have no effect on an established pregnancy and do not cause miscarriage or fetal harm.

Regulatory authorities have reinforced this scientific understanding.

Intrauterine Devices

Intrauterine devices (both copper and levonorgestrel-releasing IUDs) act primarily by:

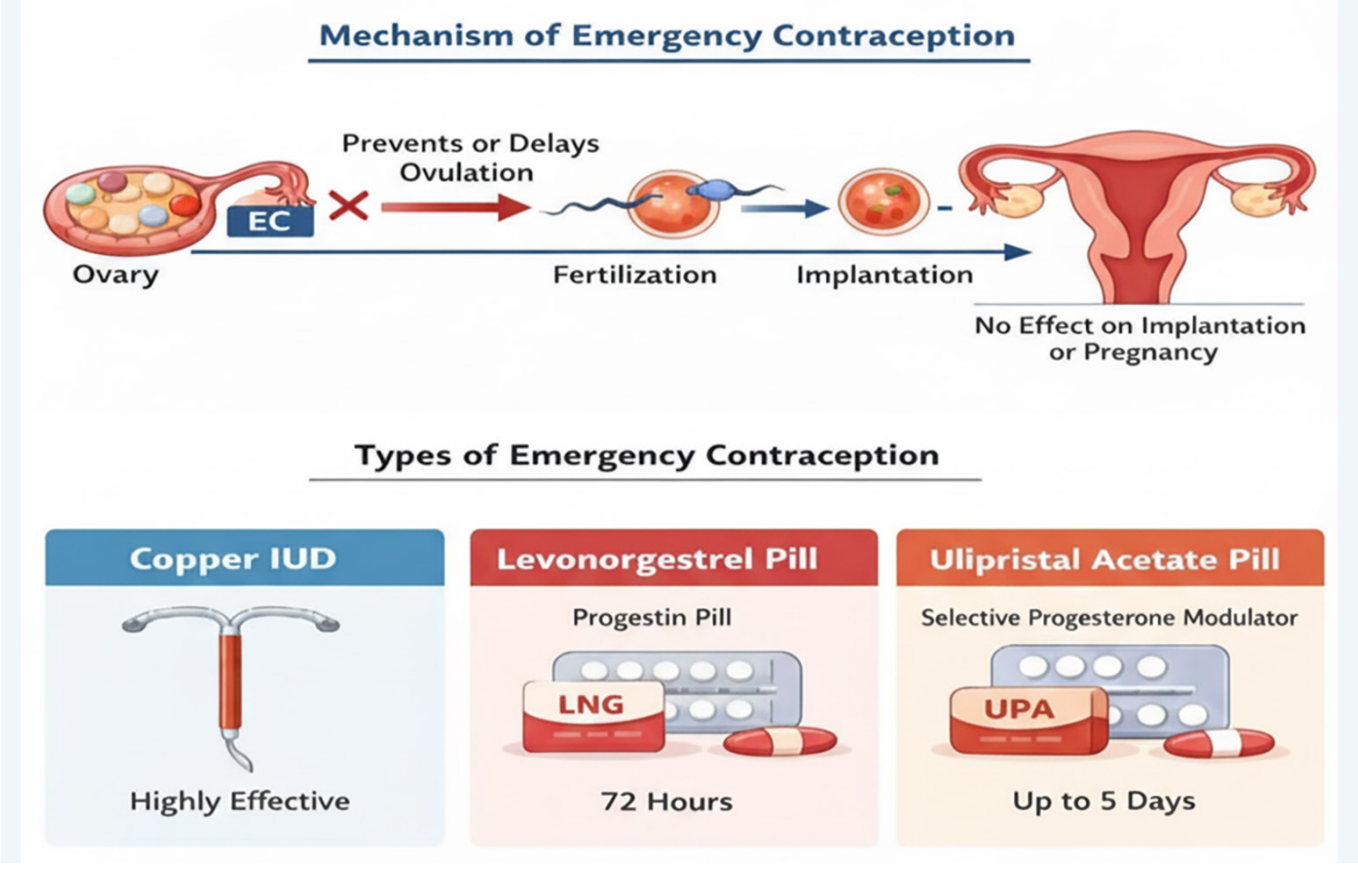
- Impairing sperm motility and function
- Creating an environment that is toxic to sperm
- Preventing fertilization

There is no credible evidence that IUDs exert post-implantation effects when used for emergency contraception.

Efficacy of various Emergency Contraception.

1. Intrauterine Devices (IUDs)

IUDs are the most effective and gold standard EC methods available and provide the added benefit of long-term contraception.



Copper IUD

- Pregnancy rate: approximately 0.1%
- Effective up to 5–7 days after intercourse
- Provides contraception for more than 10 years

Levonorgestrel 52 mg IUD

- Pregnancy rate: approximately 0.3%.
- Effective within 5 days of intercourse.
- Reduces menstrual bleeding and dysmenorrhea

2.Oral Emergency Contraception:

Efficacy ranges from 75-90%

Ulipristal Acetate

- Effective up to 120 hours (5 days)
- More effective than levonorgestrel, particularly near ovulation

Levonorgestrel

- Licensed for 72 hours but effective up to 120 hours
- Widely available over the counter in many regions

Combined Oral Contraceptives (Yuzpe Method)

- Less effective
- Higher incidence of nausea and vomiting
- Reserved for situations where dedicated EC pills are unavailable.

Myth Versus Fact: Addressing Common Misconceptions

Myth 1: Emergency Contraception Causes Abortion

Fact: EC prevents pregnancy before implantation. It does not disrupt an established pregnancy and is not an abortifacient.

Myth 2: Emergency Contraception Harms an Existing Pregnancy

Fact: If taken inadvertently during early pregnancy, EC does not cause miscarriage or fetal abnormalities.

Myth 3: It Must Be Used Within 24 Hours

Fact: While earlier use improves effectiveness, EC remains effective for up to five days after intercourse.

Myth 4: Emergency Contraception Is 100% Effective

Fact: No contraceptive method is 100% effective. IUDs reduce pregnancy risk by over 99%, while oral methods reduce risk by approximately 75–90%.

Myth 5: EC Works After Ovulation

Fact: EC primarily prevents ovulation. Effectiveness declines significantly once ovulation has occurred.

Myth 6: Repeated Use Is Dangerous

Fact: Repeated use is medically safe. However, it is less effective than routine contraception and should not replace ongoing contraceptive methods.

Myth 7: EC Causes Infertility

Fact: Emergency contraception has no long-term impact on fertility. Ovulation typically resumes in the next cycle.

Myth 8: EC Is Ineffective in Individuals with Higher Body Weight

Fact: Some evidence suggests reduced efficacy of oral EC in individuals with higher BMI. However, IUDs remain highly effective regardless of weight.

Safety Profile and Side Effects

Emergency contraception is generally well tolerated.

Common side effects of oral EC include:

- Nausea
- Fatigue
- Breast tenderness
- Headache
- Temporary menstrual irregularities

Most symptoms are mild and self-limited. IUD insertion may cause transient discomfort, cramping, or

spotting, while serious complications are rare when inserted by trained professionals.

Counseling Considerations for Clinicians

Counseling should be nonjudgmental, patient-centered and strictly confidential ,particularly for adolescents and survivors of assault.

Effective counseling should include:

- Emphasizing urgency of use especially in cases of sexual assault
- Explaining differences in effectiveness
- Addressing misconceptions
- Discussing potential side effects
- Planning ongoing contraception
- Screening for sexually transmitted infections when indicated

Public Health and Policy Implications

Expanding access to emergency contraception has meaningful public health benefits. Over-the-counter availability, pharmacist prescribing authority, and community education initiatives have improved access in many regions. However, barriers remain, including cost, geographic disparities, stigma, and misleading information.

Public education campaigns are essential to normalize EC as a responsible and preventive healthcare measure. Policymakers should support evidence-based guidelines and remove unnecessary restrictions.

Ethical and Social Considerations

Respecting reproductive autonomy means ensuring individuals can make informed decisions about their bodies. Access to EC supports autonomy, reduces inequities, and promotes gender equality.

Conclusion

Emergency contraception is a safe, effective, and essential component of reproductive healthcare. Improving awareness of emergency contraception is not solely a clinical obligation—it is a public health necessity. Ensuring that individuals understand and can access EC empowers them to make informed reproductive choices and helps reduce the global burden of unintended pregnancy.

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THRIVING INSIDE AND OUT: MENTAL HEALTH CONCERNS IN ADOLESCENTS

Dr Maya Mallya S

Chairperson:
Adolescent Committee,
KFOG.

Adolescence is a stage in the life of human being, between childhood to adulthood, where rapid physical growth, emotional growth, hormonal changes, and exposure to world happens. It is not only exciting, but also full of emotional challenges. The stage where even future of a person is decided. Sometimes adolescent may be sensitive for stress, peer pressure and may be risk taking also. Some amount of emotional ups and downs are normal;but requires concern, while suffering from anxiety, depression, substance abuse, suicidal tendencies, self-harm, eating disorders, attention disorders, and other behavioral disorders, including aggression. To truly help adolescents thrive—both inside and out—we should understand the mental health concerns they face, understand the reason behind that, and we should also promote and educate the families, schools, and communities to respond with compassion and take timely necessary action.

Factors contributing to Adolescent Mental Health Challenges

1. Pressure to achieve or Pressure to get noticed: Competitive academic environments and high expectations from parents, teachers, or society can create chronic stress. Pressure to get noticed by opposite sex, or among the friends and relatives may also cause stress and anxiety. Even altered body image can lead to disturbed mental health.

2. Social media : social media and increased screen time can also fuel comparison, low self esteem, cyberbullying, sleep disruption, loss of attention and reduce interest in studies. Even may get confused about goals of life and

confused about choosing a person as idol.

3 Family bond: Supportive family relationships are protective, while broken family, chronic conflict, neglect, or inconsistent parenting can lead to mental health struggles.

4. Trauma and Adverse Experiences: Exposure to abuse, violence, bullying, or significant loss can deeply affect emotional development.

5. Genetic Factors- A family history of mental illness can increase risk, needs early investigation and support.

Warning Signs

• Sudden mood swings or prolonged sadness

• Withdrawal from friends and activities

• Altered sleep or eating patterns

• Decline in academic performance

• Risky behaviors

• Expressions of hopelessness

• Self-harm marks or talk of death

Early recognition leads to early intervention, which significantly improves outcomes.

Protective Factors: Thriving inside and out during adolescent period requires more than symptom management: It requires nurturing resilience and well-being.

1. Strong Relationships: At least one stable, caring adult relationship dramatically reduces risk. Adolescents who feel heard and valued are more likely to seek help when struggling.

2. Emotional Literacy :Teaching teens to identify and regulate emotions builds lifelong coping skills. Schools and families can model healthy communication and problemsolving.

3. Healthy Lifestyle Habits Adequate sleep, regular physical activity, balanced nutrition, and limited screen time all support emotional regulation and brain development.

4. Purpose and Belonging: Involvement in sports,

arts, volunteering in faith communities, or clubs fosters identity development and self-esteem.

The Role of Schools:

Schools are uniquely positioned to support adolescent mental health through:

• Social-emotional learning (SEL) programs

• On-site counselors and psychologists

• Anti-bullying initiatives

• Mental health awareness campaigns

• Crisis intervention protocols

Creating psychologically safe school environments reduces stigma and promotes early help-seeking behavior. The Role of Families Parents should maintain open, judgment-free communication, validate emotions without minimizing them, set consistent boundaries with empathy, monitor digital use and seek professional help when needed Listening is often more powerful than lecturing. Adolescents benefit from knowing they can share their struggles without fear of punishment or dismissal. Stigma prevents many adolescents from seeking help. Cultural beliefs, misconceptions about mental illness, and fear of being labeled can silence young people. Normalizing conversations about mental health, integrating wellness education into curricula, and promoting youth-led advocacy can create a culture where seeking help is seen as strength, not weakness.

A Holistic View: Thriving Inside and Out

Thriving inside and out means supporting both mental and physical well-being. It means recognizing adolescents not merely as students or children, but as individuals navigating complex emotional landscapes.

True thriving involves:

• Self-awareness

• Resilience

• Healthy coping skills

• Meaningful connections

• Opportunities for growth mental health is not the absence of struggle; it is the ability to navigate challenges with support and adaptive tools. When families listen, schools engage, communities invest, and systems prioritize mental health, adolescents are empowered to flourish. Supporting their emotional well-being is not optional—it is foundational to raising a generation that thrives both inside and out.

GIVE TO GAIN: EMPOWERING THE PRESENT, ENRICHING THE FUTURE:

Dr. Suchitra Sudhir

Immediate Past President, KFOG

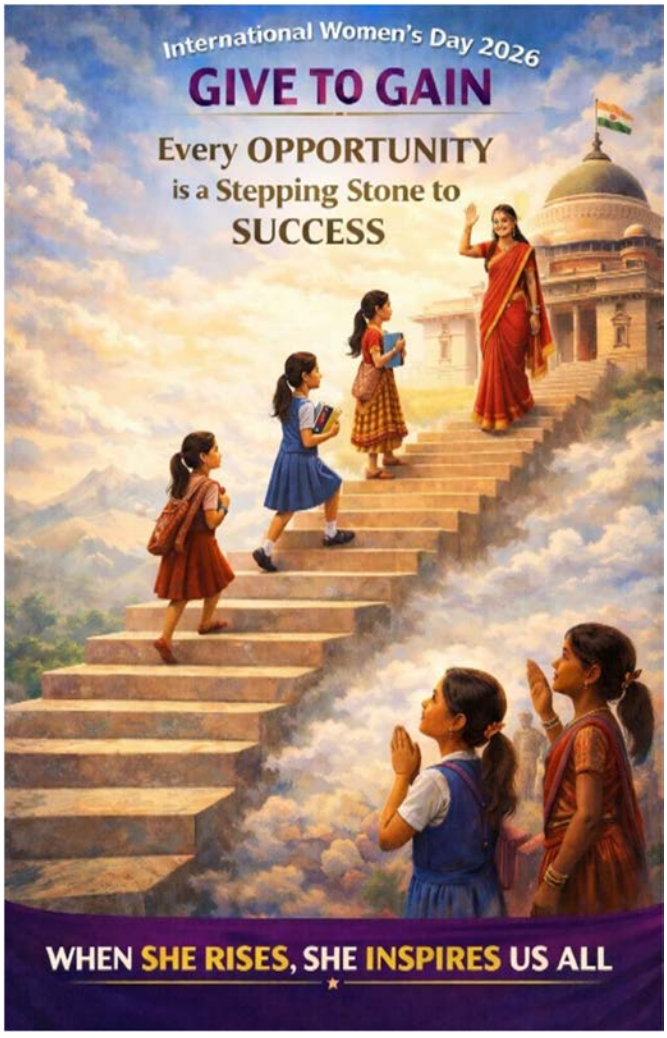
Who is a girl? A girl is a pearl! Why a pearl? She sheds gentle love and light and adds value to all around her.

Educate a girl .... empower a girl and you will get back a hundredfold of what you give!

That is why this year the International Women's Day Theme is ..." Give to Gain". Give a girl child a step up in life and she will carry forward with her, not only her family, but her entire community, her people up with her.

The shining example of this, is none other than our First Citizen, the President of India, SmtDraupadiMurmu. Coming from a remote Tribal belt of Jharkhand area, she was fortunate to be educated and as she rose in life, she saw to it that her community was uplifted in myriad ways and they were given opportunities for education and employment. The RashtrapatiBhavan has a whole area dedicated to the history and artefacts of the tribals all over India, which was initiated by her.

In older times, families hesitated to invest in their daughters, as they considered them as forfeited fortune (Hindi: parayadhan). They felt that the money spent on a girl's education, would benefit the family she got married to and not their own. The idea that women were meant to be housewives alone, just looking after the family is now outmoded. Now, men and women stand shoulder to shoulder and share the tasks in the family and profession. An empowered woman is a boon to the family. If you look around you, honestly, don't you find the daughter supporting the ageing parents? Is it not she, who rushes to take them for treatment, if they fall ill? Isn't that possible only because they gave her a good education, a good



carrier, so that she can stand on her own feet and can handle both her personal and professional lives together.

Whatever you invest in your daughter will come back to you a thousand fold, enveloped with tenderness and care. As a wag once remarked, " A son is a son, till he gets a wife, but a daughter is a daughter, all her life!"

The common response to any investment proposition is " What will we get out of it?" When you give your son and daughter equal importance and opportunities to education, it is a win-win situation. As Swami Vivekananda said, our Society is like a bird with two wings, (i.e. the men and the women), unless both the wings are equally healthy and powerful, the bird cannot fly forward.So give the girl a chance to build a future for herself,by investing in her education and securing her future .Surely you will gain much more from this investment than any other !

Thus, we say again and again,

Give to gain, give to gain....

It will save you from a lot of sadness and pain!

An empowered woman is like a lamp lit in a dark room,the light will penetrate and spread to all the nooks and corners. Let us take a pledge to give our daughters the love, care, nutrition and education they richly deserve. A healthy woman will bear healthy children . Now, our country is giving due importance to the health and nutrition of pregnant women and definitely it will reflect in a healthy, bright new generation. This is a gain for the entire Nation ! Jai Ho !

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BIOMARKERS IN GYNECOLOGIC ONCOLOGY

Dr Mumthaz P,

Chairperson;
Oncology Committee ,
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Introduction

Conventionally, the preoperative diagnosis of gynecological malignancy is based on clinical features, radiological findings, and confirmation by histopathological studies.

Over the past few decades, the availability of biomarkers (tumor markers) has played a crucial role in screening, early detection, risk assessment, diagnosis, and follow-up of response to treatment in gynecologic malignancies.

Thus, biomarkers are an integral part of the clinical evaluation of a patient with suspected malignancy, as early detection is the key to better prognosis.

Biomarkers may be derived from tissue or blood. They may include extracellular matrix molecules, receptors, growth factors, or substances released from other tissues in response to signals from the tumor.

The most common gynecological cancers include:

- Cancer cervix
- Endometrial cancer
- Ovarian malignancies

Biomarkers in Cancer Cervix

It is well known that Human Papilloma Virus (HPV) types 16 and 18 are responsible for the pathogenesis of cervical cancer.

HPV is widely used in screening programs for the detection of cervical cancer.

HPV testing systems are approved for:

- Primary HPV testing (without cervical cytology)
- Co-testing (with cervical cytology)

When HPV is positive, targeted screening such as colposcopy is indicated.

When cytology and HPV are both positive, the risk of malignancy is higher.

When HPV is negative, the screening interval can be increased from 3 years to 5 years.

Thus, the presence of HPV plays an important role in risk assessment and screening, but HPV positivity does not differentiate between transient infection and progressive infection.

Additional biomarkers in cervical cancer

- HPV RNA E6/E7 mRNA
- p16INK4a
- Ki-67

HPV mRNA testing increases specificity for transcriptionally active infection.

Oncogenic potential of HPV depends on upregulation of E6/E7 expression.

Ki-67 is a marker of cellular proliferation.

In difficult cytology or biopsy cases, dual immunostaining (p16 / Ki-67) improves diagnostic accuracy.

Positive staining indicates significant dysplasia and warrants further evaluation with colposcopy.

Biomarkers in Endometrial Cancer

Endometrial cancer is the 6th most common cancer in women.

Risk factors

- Obesity
- Diabetes
- Genetic factors

Clinical presentation

- Postmenopausal bleeding

Histological classification

Endometrial carcinoma is broadly classified into:

Type 1 – Endometrioid carcinoma

- Hormone dependent
- Better prognosis

Type 2 – Non-endometrioid carcinoma

- More aggressive
- Poor prognosis

Serum biomarkers

- CA-125
- HE4

These are useful mainly as prognostic markers in advanced disease.

Hormone receptor biomarkers

- Estrogen receptor (ER)
- Progesterone receptor (PR)
- HER-2 (Human epidermal growth factor receptor-2)

These are commonly present in endometrioid tumors and their presence supports hormonal therapy.

Molecular Classification (Cancer Genome Atlas)

The Cancer Genome Atlas (TCGA) classifies endometrial carcinoma into four molecular subgroups:

1. **POLE ultramutated**
   - o Excellent prognosis irrespective of grade
   - o May allow de-escalation of therapy
2. **MMRd / Microsatellite instability (MSI)**
   - o Defective mismatch repair
   - o Intermediate prognosis
3. **NSMP (No specific molecular profile)**
   - o Low molecular burden
   - o Favorable prognosis
4. **p53 mutated**
   - o Aggressive tumors
   - o Poor prognosis

Routine evaluation for POLE, dMMR/MSI, and p53 status is recommended.

Genetic markers in histologic variants

Tumor type	Common mutations
Endometrioid carcinoma	PTEN, TP53, POLE, dMMR, KRAS
Serous carcinoma	TP53, PIK3CA, PPP2R1A
Clear cell carcinoma	PIK3CA, PPP2R1A, TP53
Carcinosarcoma	TP53, PTEN, PIK3CA, PPP2R1A

Other markers

- L1CAM – associated with aggressive disease and poor prognosis
- PTEN mutations – seen in low-grade tumors
- CTNNB1 mutation – risk of recurrence

Biomarkers in Ovarian Cancer

Ovarian cancers have different histological types with different molecular characteristics.

Types of ovarian tumors

Epithelial tumors

- Serous
- Mucinous
- Clear cell
- Endometrioid

Sex cord stromal tumors

- Granulosa cell tumor
- Sertoli–Leydig cell tumor

Germ cell tumors

- Dysgerminoma
- Embryonal tumor
- Immature teratoma
- Choriocarcinoma
- Yolk sac tumor
- Mixed germ cell tumor

Biomarkers are used:

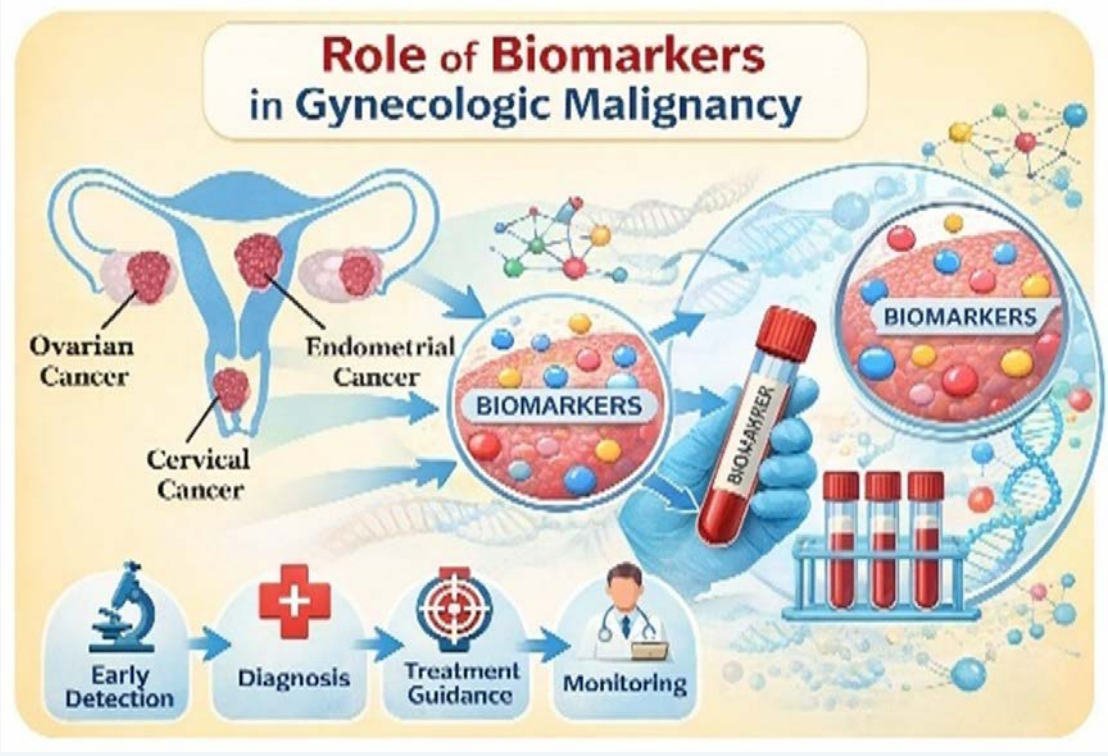
- To assess adnexal masses
- To differentiate benign vs malignant lesions
- To monitor response to treatment

Common tumor markers

Marker	Associated tumor
CA-125	Epithelial ovarian tumors
HE4	Epithelial tumors
CEA	Mucinous / metastatic GI
AFP	Yolk sac tumor
HCG	Choriocarcinoma / embryonal
LDH	Dysgerminoma
Inhibin, AMH, Estradiol	Granulosa cell tumor
Testosterone, Androstenedione, DHEA	Sertoli-Leydig tumor

CA-125 is commonly used but not specific, as it may be elevated in benign conditions:

- Functional cyst
- Endometrioma
- Hydrosalpinx
- Dermoid cyst
- Borderline tumors
- Peritoneal cyst



Algorithms for Adnexal Mass Evaluation

OVA1

Includes 5 biomarkers:

- CA-125
- Beta-2 microglobulin
- Transferrin
- Transthyretin
- Apolipoprotein A1

Score range: 0–10

Postmenopausal:

- Low risk < 4.4
- High risk ≥ 4.4

Premenopausal:Low risk < 5High risk ≥ 5

OVERA

Markers:

- CA-125 II
- HE4
- Apolipoprotein A1
- FSH
- Transferrin

Low risk <5

High risk ≥5

Sensitivity ~91%

NPV ~97%

ROMA (Risk of Malignancy Algorithm)

Uses:

- CA-125
- HE4
- Menopausal status

High risk:

- Premenopausal ≥13.1%
- Postmenopausal ≥27.7%

RMI (Risk of Malignancy Index)

Formula:

I = U × M × CA-125

U = Ultrasound score

M = Menopausal status

CA-125 = serum level

Score ≥250 → Refer to specialist

ADNEX Model

Includes:

- Age
- CA-125
- Institution type
- 6 ultrasound parameters

Provides probability of benign vs malignant mass.

Genetic biomarkers

BRCA1 / BRCA2

- Increased risk of ovarian and breast cancer
- Predicts response to platinum therapy
- Predicts response to PARP inhibitors

Recommended in all non-mucinous epithelial ovarian cancers.

HRD (Homologous recombination deficiency)

- Predicts response to PARP inhibitors

TP53 mutation

- Seen in high-grade serous carcinoma

Biomarkers in Vulvar and Vaginal Cancer

- HPV (especially type 16)
- p16 overexpression → better prognosis
- TP53 mutation → non-HPV tumors, aggressive

Biomarkers help in deciding:

- Extent of surgery
- Need for adjuvant therapy

Biomarkers in Gestational Trophoblastic Disease

β-HCG is the main biomarker.

- Persistent or rising β-HCG → persistent disease
- Serial β-HCG → monitor regression
- Guides need for chemotherapy.

INTRA UTERINE VIRAL INFECTIONS IN PREGNANCY

Dr Rani Lakshmi S

Chairperson: Fetal Medicine Committee, KFOG.

Introduction

Congenital infections remain a significant cause of fetal morbidity and mortality worldwide, contributing to structural anomalies, neurodevelopmental impairment, and long-term sequelae such as sensorineural hearing loss. Early diagnosis and careful prenatal surveillance are essential for optimizing perinatal outcomes.This article reviews viral infections with placental transmission and teratogenic potential concentrating on CMV, Varicella and Rubella.

Pathophysiology and Mechanisms of Fetal Infection

Congenital infections are primarily transmitted transplacentally during maternal viremia. The severity of fetal involvement depends on several factors, including timing of maternal infection, virulence of the pathogen, placental susceptibility, and fetal immune response. Early gestational infection often results in more damage due to critical phases of organogenesis and immature fetal immune defense. The placenta plays a dual role, acting as both a barrier and reservoir for pathogens. While some infections may not cross the placenta immediately, persistent maternal viremia can eventually lead to fetal infection which explains why ultrasound abnormalities may appear weeks after maternal infection, necessitating serial follow-up imaging even when initial scans are normal.

Cytomegalovirus (CMV)

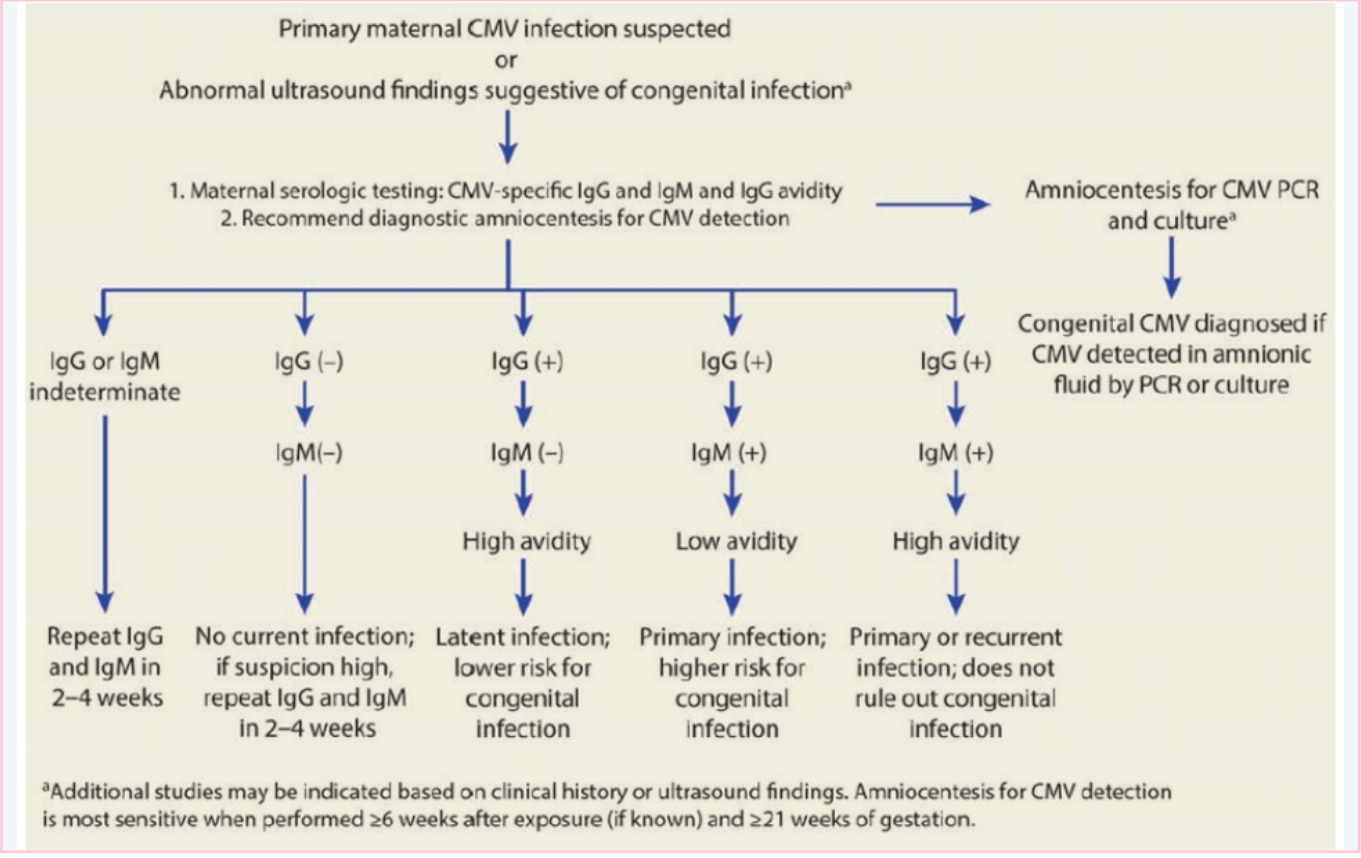
CMV infection caused by a DNA herpes virus (HHV-5), is the most common perinatal infection and a leading cause of non-genetic sensorineural hearing loss. Most primary infections are asymptomatic but those who acquire primary CMV infection during pregnancy are at highest risk of a congenitally infected fetus. The vertical transmission rates increases with advancing gestation and is as high as 40- 70% in the third trimester(ACOG 2020) ,but

severe fetal damage is associated with early infection.

Typical ultrasound findings in congenital CMV infection:

- Ventriculomegaly and microcephaly
- Periventricular calcifications
- Intracranial hemorrhage
- Growth restriction
- Hyperechogenic bowel and ascites
- Hepatosplenomegaly

PRENATAL DIAGNOSIS



Serum levels of CMV IgM alone do not accurately diagnose primary infection because antibodies may persist for more than a year after infection and may again rise following reactivation or infection.To clarify a primary infection from a past one serological CMV specific IgG avidity assays measure the avidity .Low IgG avidity indicates a primary CMV infection within the preceeding 3 to 4 months and high IgG excludes primary infection within the previous 3 months.If there are signs of fetal infection on ultrasound diagnostic amniocentesis and CMV PCR of the amniotic fluid is the gold standard for the diagnosis of fetal infection.

MANAGEMENT

Currently no curative treatments are available for CMV Infection. Few studies have recommended valacyclovir 8g daily to pregnant women which mitigated adverse outcomes in 80% of fetuses. For the CMV affected fetuses a detailed sonographic evaluation and referral to a fetal medicine specialist

is indicated. Delivery at term is the goal. Prevention includes following personal hygiene measures such as hand washing and avoid sharing utensils. Prognosis depends on gestational age at infection, presence of cerebral abnormalities, and laboratory markers such as viral load. Fetuses with normal neuroimaging generally have favourable outcomes, though late-onset hearing impairment remains possible.

Varicella-zoster virus

Varicella-zoster virus (VZV) is a double-stranded DNA herpesvirus. Primary infection is transmitted by respiratory droplets or through direct contact with an infected individual. The incubation period is 10 to 21 days, and a nonimmune woman has a 70- 90% risk of becoming infected after exposure (Whitley, 2018). Primary varicella has a 1-2 days flu-like prodrome, which is followed by pruritic vesicular lesions that crust after 3 to 7 days. Affected patients are contagious from a day before the rash onset to until all lesions become crusted.

Fetal and Neonatal Infection

Primary varicella during the first half of pregnancy, the fetus may develop Congenital varicella syndrome and features include chorioretinitis, microphthalmia, cerebral cortical atrophy, growth restriction, hydronephrosis, limb hypoplasia and cicatricial skin lesions. The highest risk period for vertical transmission is between 13 -20 weeks, with 2 percent of exposed fetuses having evidence of infection. After 20 weeks, congenital varicella is rare. If the fetus or neonate is exposed to active infection just before or during delivery, and before maternal antibody has formed, the newborn faces a serious threat. Attack rates range from 25-50 percent, and mortality rates approach 30 percent. In some instances, neonates develop disseminated visceral and CNS disease, which is commonly fatal. For this reason, varicella-zoster immune globulin (VariZIG) should be administered to neonates born to mothers who have clinical evidence of varicella 5 days before and up to 2 days after delivery (Centers For Disease Control and Prevention, 2013).

Diagnosis

Congenital varicella may be diagnosed using PCR-based testing of amniotic fluid, although a positive result does not correlate well with the development of congenital infection. A detailed anatomical sonographic evaluation performed at least 5 weeks after maternal infection may disclose abnormalities, but the sensitivity is low.

Management and Prevention

Maternal infection: Isolation to be advocated in any infected case. Exposed gravidas with a negative history of prior chickenpox or vaccination should undergo VZV serological testing. Seronegative women should be given intramuscular VariZIG, 125 units per 10 kg body weight, up to a maximum dose of 625 units (5 vials). Although best given within 96 hours of exposure, its use is approved for up to 10 days to prevent or attenuate varicella infection (Centers for Disease Control and Prevention,2013).

Maternal and Fetal Infection

For women with primary varicella, a chest radiograph is recommended by many because VZV pneumonia often presents with few symptoms. Those patients who require IV fluids and especially those with pneumonia are hospitalized. Acyclovir therapy is given to women requiring hospitalization 10 to 15 mg/kg intravenously every 8 hours until afebrile; followed by oral acyclovir 800 mg five times daily to complete 7 days and until lesions have crusted. For uncomplicated primary varicella without hospitalization or for herpes zoster, treatment is oral acyclovir, 800 mg five times daily for 7 days. For the VZV-affected fetus, greater antenatal surveillance is typically implemented. Serial sonography may help identify poor growth. Delivery at term is the norm unless fetal findings prompt earlier timing.

Rubella Virus

Rubella is caused by an RNA Toga virus & transmission is via nasopharyngeal secretions, with a transmission rate of 80 percent to nonimmune individuals. Maternal rubella is usually a mild febrile illness with an incubation of 12-23 days. A generalized maculopapular rash begins on the face and spreads to the trunk and extremities. Other symptoms

may include arthralgias or arthritis, head and neck lymphadenopathy, and conjunctivitis. Viremia usually precedes clinical signs by approximately a week, and adults are infectious during viremia and through 7 days after the rash appears. Up to half of maternal infections are subclinical and may cause spontaneous abortion or devastating fetal infection.

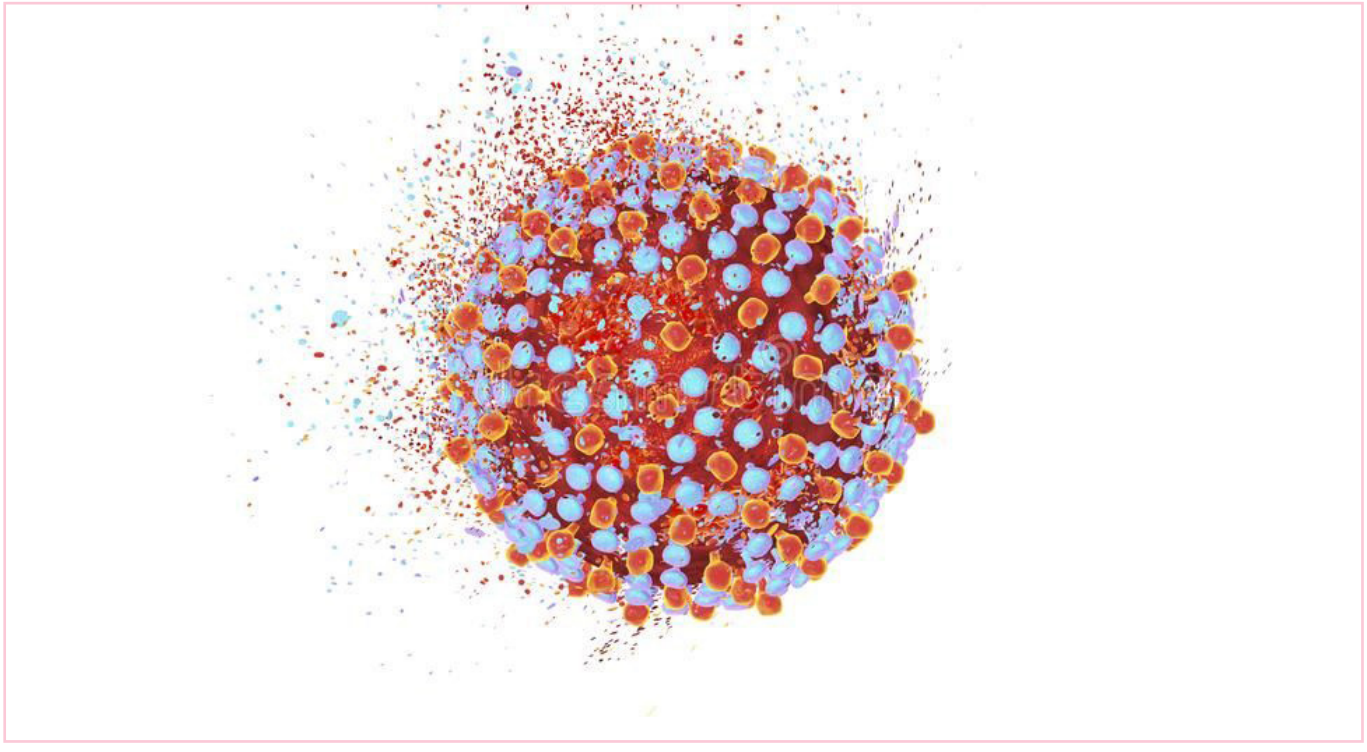
Diagnosis

The diagnosis is usually made with serological analysis. Specific IgM antibody can be detected using ELISA for 4 to 5 days after onset of clinical disease, but antibody can persist for up to 6 weeks after appearance of the rash. Importantly, rubella virus reinfection can give rise to transient low levels of IgM. Serum IgG antibody titre peak 1-2 weeks after rash onset. These may fail to distinguish between recent infection and preexisting immunity if the specimen is obtained more than a week after symptoms. IgG avidity testing aids differentiation, and high-avidity IgG antibodies indicate an infection at least 2 months prior.

Fetal Effects

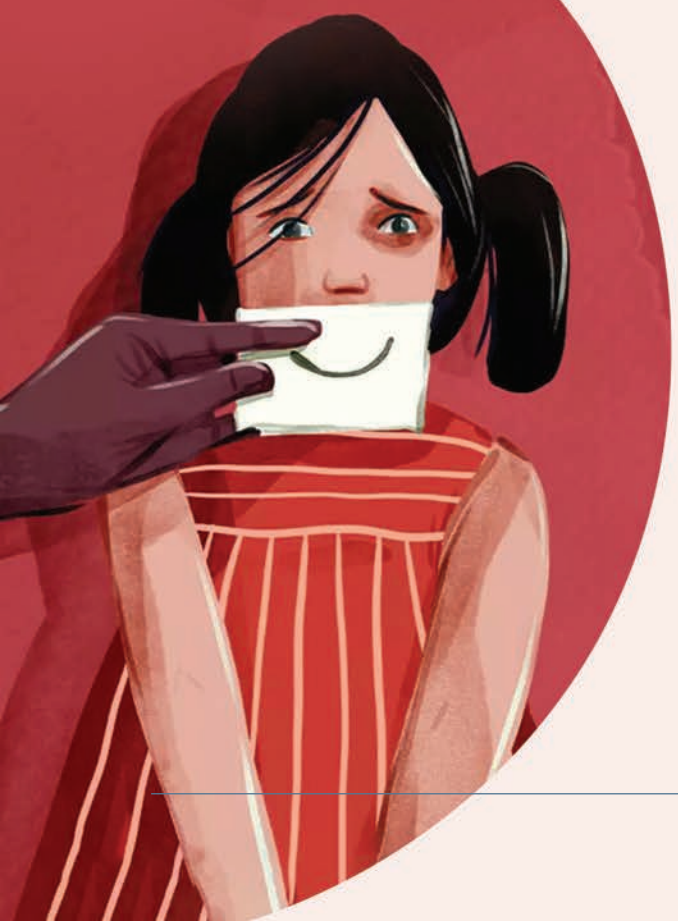
Rubella virus is one of the most complete teratogens, and its effects are worst during organogenesis. Up to 90 percent of pregnant women with rubella and a rash during the first 12 weeks of gestation have an affected fetus . At 13-14 weeks gestation, this incidence is 50 percent, and by the end of the second trimester, it is 25 percent. Defects are rare after 20 weeks of gestation. Features of congenital rubella syndrome are cardiac septal defects, pulmonary stenosis, microcephaly, cataracts, microphthalmia, and hepato-splenomegaly. Other abnormalities include sensorineural deafness, intellectual disability, neonatal purpura, and radiolucent bone disease.

Rubella has no specific treatment. Droplet precautions for 7days after the onset of the rash are recommended. Post exposure passive immunization with IVIG may be of benefit if given within 5 days of exposure. When rubella infection is diagnosed in the mother, targeted sonographic examination is performed to evaluate for fetal structural anomalies. Referral to and counseling by a maternal–fetal medicine specialist is warranted. If ultrasound findings suggest congenital infection or growth delay, diagnostic amniocentesis is recommended to detect rubella virus by PCR and to test for other congenital infections. As prevention, a live attenuated rubella vaccine should be offered to nonpregnant women of childbearing age who lack evidence of immunity.



THE POCSO PARADOX: WHY INDIA'S AGE OF CONSENT REQUIRES A "CLOSE-IN-AGE" EXCEPTION

Dr Ashish Bens
Chairperson Medicolegal Committee, KFOG



The Collision of Law and Biology

The Protection of Children from Sexual Offences (POCSO) Act, 2012, was conceived as a robust legislative shield against predators. However, a decade into its implementation, a troubling pattern has emerged: the criminalization of consensual adolescent relationships. In the legal corridors of India, these cases are often whispered about as the tragedy of "Jailed Romeos and Heartbroken Juliets."

The crux of the crisis lies in the rigid definition of the age of consent. Under POCSO, any individual below 18 is a child, and any sexual act involving a child is a non-bailable offense. The law does not distinguish between a predatory 40-year-old and a 19-year-old in a peer-to-peer relationship. In the eyes of the statute, "consent" from a minor is a legal nullity.

The "Consent" Paradox and Mandatory Reporting

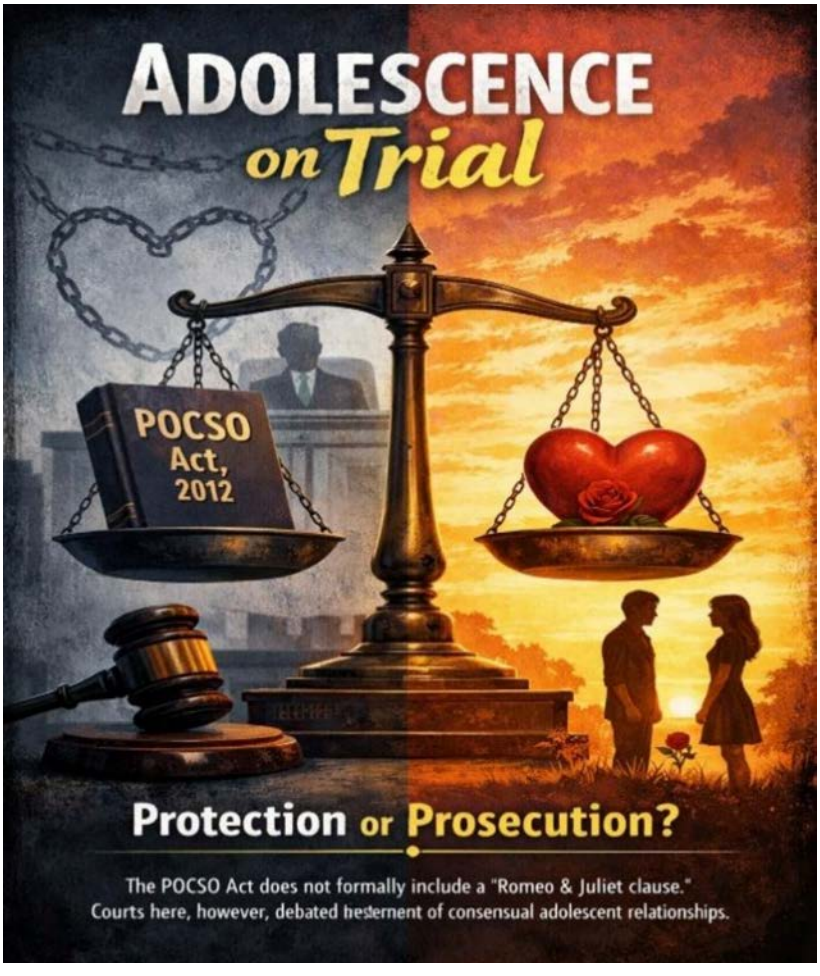
For medical professionals, Section 19 of the Act creates a specific ethical and legal dilemma. It mandates that any person with knowledge of a sexual offense against a child must report it. When a teenage girl seeks reproductive healthcare or antenatal care, the doctor is legally bound to file a police complaint. This often results in:

- Criminalization of Youth: Young men facing "rape" charges for consensual acts, derailment of education, and lifelong stigma.
- Healthcare Avoidance: Pregnant teenagers avoiding hospitals for fear of legal repercussions, leading to dangerous "back-alley" procedures.
- Weaponization by Families: Parents using the law to punish relationships they disapprove of due to caste, religion, or social status.

A Global Perspective: "Romeo and Juliet" Clauses

While India maintains a "zero-tolerance" blunt instrument, many developed legal systems have implemented "Graded Consent" or "Close-in-Age" exemptions. These frameworks recognize that teenagers need space to grow without the looming threat of a prison cell.

Country	Min. Age of "Victim"	Age Gap Allowed	Essential Condition
Canada	14	< 5 years	No "Position of Trust" (e.g., coach)
Texas (USA)	14	3 years	Consensual and non-coercive
Victoria (AUS)	12	2 years	Both parties are minors/young adults
South Africa	16	2 years	Focused on preventing criminal records



The Judicial Pushback: Precedents of Compassion

The Indian judiciary has begun to craft a "shield of common sense" to bridge the gap between the statute and human justice:

- The "Mutual Innocence" Doctrine: In Vijayalakshmi v. State (2021), the Madras High Court ruled that punishing adolescent boys was never the law's intent, noting that prosecution often causes more trauma to the girl than the relationship itself.
- The Right to Autonomy: In State v. Hitesh (2025), the Delhi High Court emphasized that adolescent attraction is a biological reality, advocating for a "rights-based" lens over mechanical branding of sex offenders.

The Path Forward: 2026 and Beyond

In January 2026, the Supreme Court in State of Uttar Pradesh v. Anuradha officially urged the Union Government to introduce a "Romeo-Juliet Clause." While the Ministry of Women and Child Development remains

hesitant—fearing the dilution of protections against child marriage—the Law Commission's 283rd Report suggests a "Middle Path" through Guided Judicial Discretion.

Conclusion: Justice vs. The Statute

The tragedy of the "Jailed Romeo" is a human rights concern. To truly protect children, the law must be a scalpel, not a sledgehammer. It must be sharp enough to excise the predator, yet nuanced enough to spare the innocent. By incorporating "Close-in-Age" defenses, India can ensure that its prisons are reserved for those who hunt children, not those who are simply growing up alongside them. Protection should never come at the cost of common sense.

STRESS, ANXIETY, AND DEPRESSION STATE AMONG MEDICAL STUDENTS: PREVALENCE, RISK FACTORS, AND INTERVENTIONS.

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Introduction

Medical students are a unique population exposed to continuous academic pressure, emotional challenges and high expectations. The transition from pre-medical education to medical school often involves drastic lifestyle changes, sleep disruption, and heightened performance demands. Although stress can many a times be a motivating force, chronic or poorly managed stress may evolve into anxiety disorders and depressive symptoms. The term SAD (Stress, Anxiety & Depression) state reflects the overlapping and interrelated nature of these psychological conditions.

Increasing evidence suggests that medical students experience higher rates of psychological distress compared with peers of same age. (1) These mental health concerns are not just personal struggles. They carry implications for professionalism, empathy, academic performance, and future patient care. Untreated SAD can fuel burnout and elevate suicide risk.

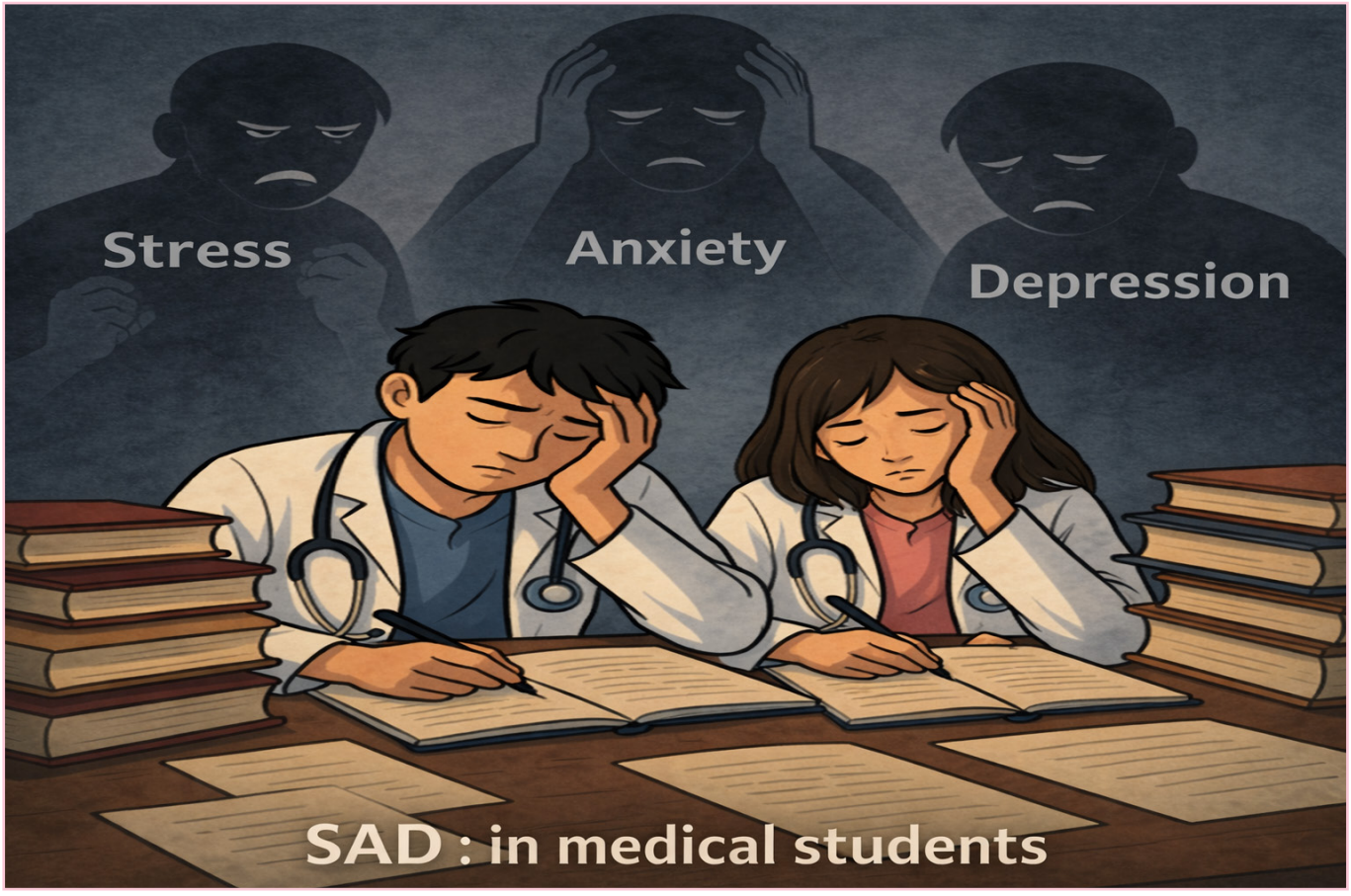
Prevalence and Epidemiology

Medical students worldwide exhibit alarmingly high rates of stress, anxiety, and depression (SAD), with epidemiology revealing consistent patterns influenced by region, gender, and academic year. Globally, pre-COVID meta-analyses estimate depression at 27– 33%, anxiety at 28–34%, and stress at 29–41%, rates 1.5–2 times higher than age-matched peers. During COVID, these surged to 38–41% for anxiety & depression due to isolation and academic disruptions. (2,3) Asia reports lower pooled prevalences (e.g., 36% depression) versus Europe (52%) or Africa/ North America.

In India, a 2024 meta-analysis of 43 studies involving more than 15,000 undergraduates showed a prevalence of 48% depression, 54% anxiety & 50% stress, and 21% suicidal ideation.(4) Trends

show post-COVID persistence, with 2023–2025 surveys indicating 51– 59% anxiety, 34–58% depression/stress in South Indian colleges. Kerala data is parallel to national prevalence. A study among 200 MBBS students at Thrissur in 2022 across two colleges found 26% abnormal anxiety and 13% depression which escalated to 71% anxiety & 62% depression post COVID shutdowns. (5,6,7)

A difference based on gender is also noted in SAD state among medical students. Females consistently show higher odds for SAD.



Risk Factors and Causes

- Academic Factors: High stake exams like NEET entrance and university exams along with excessive workload are primary drivers. Indian studies report 60–70% stress attribution to vast syllabus during student period and extensive hours of duty during internship. Fear of failure and competitiveness are key elements leading to SAD. Performance comparison with high achieving peers add fuel to same. (8)
- Transition and Adaptation : Change from comfortable atmosphere to relocation and separation from family support is more seen in professional colleges compared to other graduates. Adjustment to new teaching methods and early exposure to clinics also have impact on the mental health of medical students.
- Psychosocial/Personal Factors: Female gender (OR 1.3–2.0), low resilience, and loneliness are factors which can increase SAD state. Females endure higher rates (52% vs. 44% males).
- Lifestyle Factors: Poor sleep (<6 hr/night), irregular diet, and sedentary habits exacerbate SAD. Sleep deprivation due to huge syllabus during student period and night duties during internship is a usual norm among MBBS graduates. Irregular diet intake and junk food reliance is related to 35% higher anxiety.
- Emotional Stressors : Emotional stressors like frequent encounters with patient suffering and mortality, challenging ethical decision - making scenarios and experiences of imposter syndrome can collectively contribute to heightened psychological vulnerability.

- Personality traits: Many students who achieve admission for MBBS course are usually perfectionistic, self-critical and high achievement personalities. This can predispose to SAD and other distress when exposed to the vast and tough MBBS syllabus .
- Environmental & Institutional Factors: More than 60 % MBBS students are paying high fees for the course. This financial stress coupled with lack of mental support compound risks. Most of institutions do not have any counselling services or wellness programs for students.

These factors interact synergistically. For ex: the workload disrupts sleep-> sleep deprivation increases anxiety-> anxiety can affect academic performances etc.

Clinical Manifestations

In medical students, the state of Stress-Anxiety-Depression (SAD) represents a spectrum of overlapping psychological distress commonly encountered during training.

Stress often manifests initially as persistent fatigue, irritability, sleep disturbances, impaired concentration, and nonspecific somatic complaints such as headache or gastrointestinal discomfort.

Stress	Anxiety	Depression
Fatigue	**Excessive worry**	**Low mood**
Irritability	**Palpitations**	**Anhedonia**
Sleep Disturbances	**Restlessness**	**Change in apetitie**
Lack of concentration	**Avoidance behaviours**	**Sleep disturbances**
Somatic complaints like headache/ GI symptoms	**Panic attacks**	**Feelings of worthlessness**

Table 1 : Clinical manifestations of SAD

As stress intensifies, anxiety symptoms may predominate. Students may experience excessive and uncontrollable worry related to performance, restlessness, palpitations, avoidance behaviors, and, in severe cases, panic attacks. Anxiety can interfere with effective learning, decision-making, and patient interactions.

Depressive symptoms are characterized by low mood, anhedonia (loss of interest or pleasure), changes in appetite, sleep disturbances, feelings of worthlessness, and reduced motivation. Depression in medical students is particularly concerning due to its association with academic decline, burnout, and increased risk of self-harm.

The overlap between these conditions is substantial, and students may present with mixed symptoms. Thus, SAD in medical students represents a continuum of psychological distress marked by emotional, cognitive, behavioural, and somatic manifestations, requiring early recognition and support to prevent long-term consequences

SAD can result in short- and long-term consequences which can affect individual as well as healthcare systems. Short term effects can manifest rapidly resulting in poor academic performance and exam failures. (9) There is increased surge in absenteeism where up to 20–30% of students with SAD miss lectures & clinical postings. Concentration deficits can increase procedural errors during internship postings. In Kerala studies report 25% of affected students deferring exams due to acute symptoms. Long-term effects are more insidious. Emotional exhaustion and cynicism can lead to suicidal tendencies. (10,11)

Future doctors with unresolved SAD deliver sub

optimal outcomes. Studies showed association of physician burnout to medication errors, longer hospital stays, and reduced adherence counseling. (12) In high volume settings like Kerala, this can lead to empathetic lapses in practices like for in depts like OBG and causing maternal distress.

Interventions and Management

Identification & Early Recognition: Early detection is crucial in identifying psychological distress among medical students. Warning signs may include a persistent decline in academic performance, frequent illness or absenteeism, social withdrawal from peers, disturbances in sleep or appetite, and verbal or written expressions of hopelessness. Recognizing these early indicators allows timely intervention, preventing progression to burnout, major depression, or self-harm risk. Screening tools (e.g., DASS-21, PHQ-9, GAD7) may assist institutions in identifying at-risk students.

Preventive and Mitigating Strategies:

Effective management requires a multilevel approach, targeting the individual, the institution, and the faculty environment.

• Individual-Level Interventions

At the individual level, students should be equipped with skills that enhance resilience and adaptive coping

- **Stress Management**

Development of time management skills

Setting realistic and achievable goals

Maintaining an appropriate study - life balance

- Lifestyle Measures

Ensuring regular and adequate sleep

Engaging in routine physical exercise

Adopting a balanced and nutritious diet

- Psychological Techniques

Cognitive Behavioural Therapy (CBT)

Relaxation training techniques

- Social Support
- Strong support systems including peer networks, mentoring relationships, and family engagement

Institutional-Level Interventions

India's National Medical Commission (NMC) mandates screening, counselling, mentorship, and fitness to practice protocols via 2024 Task Force guidelines. (13)

- **Curriculum Reforms**

oRationalizing academic workload o Promoting active and student centered learning o Integration of practices like Yoga in curriculum

- **Assessment Modifications**

oEncouraging continuous formative assessment with constructive feedback

- **Mental Health Services**

oProviding accessible and confidential counseling services o Conducting periodic mental health screening programs

- **Mentorship Systems**

oEstablishing structured faculty advisory systems and peer mentorship programs.

- **Promoting a Supportive Culture**

o Addressing stigma related to mental health o Encouraging timely help seeking behaviour among students.

Role of Faculty

Educators play a pivotal role in shaping the emotional climate of medical education.

Their responsibilities include

- Early recognition of distressed students
- Providing constructive and supportive feedback
- Avoiding humiliation based or fear driven teaching practices
- Modelling healthy work life balance and professional well-being.

Discussion and Recommendations

The SAD state in medical students reflects a complex interplay of academic, psychological, social, and systemic factors. While stress is inherent to medical education, excessive distress is neither inevitable

nor acceptable. Institutions must transition from reactive support to proactive prevention.

Despite global evidence on stress, anxiety, and depression (SAD) among medical students, critical gaps persist in our place. Most interventions are derived from Western RCTs, lacking large-scale, India-specific trials adapted to local stressors like NEET PG exams and regional stigmas. Longitudinal studies tracking SAD progression from MBBS to residency are scarce, hindering causal insights. Kerala data remain cross sectional, underrepresenting private colleges and OBGYN residents.

Policy makings should happen from NMC level by enforcing mandatory annual SAD screening via validated scales. This should be integrated into curricula with workload caps of maximum <80 hrs/ week during internship and residency. Institutions should fund peer mentoring and digital CBT platforms, targeting high-risk groups.

Conclusion

Stress, anxiety, and depression are highly prevalent among medical students and carry significant consequences. Untreated SAD threatens academic success as well as affect patient safety. Early recognition, destigmatization, and multi-level interventions are essential. Protecting student mental health is an ethical responsibility and a strategic investment in the future healthcare workforce.

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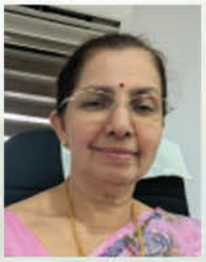

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