06 - Men's Health: Creating Ripples Across Women's Lives

Gyan - Vahini

From

FOGSI, Food Drugs & Medicosurgical Equipment Committee June - 2025

"When we talk about women's health, we must also talk about the men in their lives. Because every ripple in his well-being touches her body, mind, and future."

— Dr. Asha Jain

Editor & Chairperson, FOGSI FDMSE Committee

Message From Dr. Sunita Tandulwadkar

Dr. Sunita Tandulwadkar

President FOGSI-2025

In the world of obstetrics and gynecology, our lens has traditionally focused on women's bodies—and rightly so. Yet, as we journey deeper into holistic care, it becomes impossible to ignore a profound truth: **Men's health casts long shadows across women's lives**. Whether as sons, brothers, partners, or fathers, men's physical and mental well-being has a deep, often under-recognized impact on the emotional, social, reproductive, and economic realities of women.

This unique edition of the FDMSE E-Magazine explores that intersection with clarity and compassion. From the nutritional and emotional demands of raising boy children to the mental health burden carried by mothers of sons with learning disorders, this issue captures the silent struggles many women shoulder. It also delves into how adolescent male behavior can influence girls' safety and self-esteem, and how shared environments lead to parallel risks for lifestyle diseases in siblings.

Equally significant are the themes surrounding paternal mental illness, male substance use, and its ripple effects—ranging from violence and reproductive consequences to economic hardships and social stigma. The issue offers nuanced perspectives on sensitive topics like male infertility, sexual dysfunction, and how these often-hidden challenges weigh heavily on women's bodies and relationships.

As President of FOGSI, I believe this edition marks an **important shift in our collective narrative**. By acknowledging how deeply men's health intersects with women's well-being, we are taking a bold step toward a more inclusive and empathetic model of care. It also urges us to reframe women's health not just in isolation, but as part of a **family, societal, and relational ecosystem**.

I commend the FDMSE Committee and all contributing authors for daring to spotlight these often-overlooked dimensions. Let us, as the FOGSI community, move forward with awareness, advocacy, and a commitment to breaking intergenerational cycles of stress, silence, and suffering—for **healthier women, stronger families, and a more compassionate future.**

With heartfelt regards,
Dr. Sunita Tandulwadkar
President, FOGSI 2025

Message from Dr Abha Singh

Dr. Abha Singh
Vice President FOGSI-2025

Dear Fogsians, Warm Greetings!

In our journey to improve women's health, we often overlook the less obvious, yet powerful, influences that shape women's lives—men's health being one of them. This extraordinary edition of the FDMSE Committee's e-magazine, "Men's Health: Ripples Across Women's Lives," curated by Dr. Asha Jain, invites us to confront this very intersection. It examines how the physical, emotional, sexual, and social health of boys and men—from infancy through old age—profoundly affects women at every stage of life.

What makes this edition unique is its unapologetic exploration of difficult themes: substance abuse and its obstetric consequences, economic and emotional strain from male sexual dysfunction, and the hidden toll of male infertility on women's bodies and psyches. At the same time, it also points to solutions—redefining masculinity, promoting shared contraceptive responsibility, and utilizing digital tools for joint couple care. These articles are not just informative; they are transformative.

The FDMSE Committee under Dr. Jain has demonstrated foresight and sensitivity in elevating this conversation from the margins to the mainstream. This aligns perfectly with FOGSI's evolving mission to promote preventive, inclusive, and integrated healthcare models. I am confident this edition will be a valuable resource not only for gynecologists but also for policymakers, public health advocates, and all those committed to gender equity in health.

Congratulations to the entire team for their passion, intellect, and vision. May this issue be the beginning of more cross-cutting dialogues that link men's and women's health for a healthier society.

Warm Regards,

Dr Abha Singh
Vice President North Zone Fogsi

Message from Dr Suvarna Khadilkar

Dr. Suvarna Khadilkar
Secretary General FOGSI-2025

Dear FOGSI Members,

The June 2025 edition of the FOGSI FDMSE e-magazine is a landmark publication—courageous in concept and comprehensive in execution. With the powerful theme "Men's Health: Ripples Across Women's Lives," this edition curated by Dr. Asha Jain, Chairperson of the FDMSE Committee, opens our eyes to the critical yet often-ignored interplay between men's health issues and the well-being of women and families.

Whether it is the stress borne by mothers raising boys with learning difficulties, the emotional trauma of wives dealing with their partner's infertility, or the burdens daughters face while caregiving for frail, elderly fathers—this magazine offers deeply researched, sensitively written, and clinically relevant narratives. It pushes the boundaries of conventional thinking by asking us to consider men not just as patients in their own right, but as pivotal influences in the reproductive, emotional, and social health trajectories of women.

This is not about shifting the spotlight away from women, but about expanding it—so that we illuminate the full ecosystem within which women live, love, and heal. I commend Dr. Asha Jain for her clarity of vision and her ability to bring together a stellar team of authors who bridge clinical science, mental health, social determinants, and gender justice.

This edition serves as a bold reminder that improving women's health must involve the men in their lives. It is my sincere hope that this edition sparks awareness, inspires action, and informs practice across the FOGSI fraternity and beyond.

With best and warm wishes,

Dr. Suvarna Khadilkar
Secretary General, FOGSI

Dr. Asha Jain
Chairperson
FOGSI FDMSE Committee

FOREWORD

With immense pride and deep reflection, I present to you the June 2025 edition of the FOGSI FDMSE e-magazine, "Men's Health: Ripples Across Women's Lives." This issue represents more than a collection of articles—it is a heartfelt call to expand the lens through which we view women's health by recognizing the interconnectedness of gendered experiences, biology, relationships, and systems.

As obstetricians and gynecologists, our primary focus has always been the health and dignity of women. Yet we encounter, day after day, how the health of the men in their lives—be it a son, brother, partner, father, or even employer—has a profound influence on women's physical, mental, and reproductive outcomes. Whether through shared environments, unequal caregiving expectations, or the psychosocial impact of gender roles, men's health is not separate from women's health—it is woven through it.

The idea behind this issue was to give structure to this silent reality. We chose to explore men's health across the life course, beginning from childhood and adolescence to midlife and into elder years—always with the question in mind: How does this affect the women around them? The result is a powerful body of work that traverses clinical practice, mental health, family dynamics, intimate relationships, policy, and public health.

I am profoundly grateful to Dr. Sunita Tandulwadkar, our dynamic President of FOGSI, for her vision and wholehearted support, to Dr. Abha Singh, our inspiring Vice President In-Charge, for her guidance and encouragement, and to Dr. Suvarna Khadilkar, our meticulous Secretary General, for always pushing for excellence in everything we do.
A very special thank you to the brilliant and committed authors who shaped this issue with thought, rigor, and care:

- **Dr. Ishan P Shah** – for opening the issue with the rarely discussed yet crucial link between boy child care and maternal mental load.
- **Dr. Varuna Pathak** – for highlighting the safety concerns adolescent boys pose to sisters in shared spaces.
- **Dr. Neetha George** – for connecting sons' learning disorders to maternal burnout.
- **Dr. Archana Singh** – for her thoughtful take on shared lifestyle diseases and intergenerational risk.

- **Dr. Ragweshwar Jyoti** – for sensitively exploring paternal mental illness and daughters' outcomes.
- **Dr. Shikha Sachan** – for bringing alive the economic and social trauma of alcohol dependence in fathers.
- **Dr. Sarda** – for her strong clinical narrative on substance abuse and domestic violence in obstetrics.
- **Dr. Jyothi G.S.** – for revealing the undercurrent of custody battles and legal strain on women.
- **Dr. Padmaja** – for unveiling the hidden toll of male infertility on women's bodies and psyches.
- **Dr. Sugandha Goel** – for addressing male sexual health and its impact on women's intimacy.
- **Dr. Sandhya Rani** – for drawing vital links between HPV in men and cervical cancer prevention.
- **Dr. Sreedevi Vellanki** – for connecting non-communicable diseases in men to women's caregiving burdens.
- **Dr. Prerna Saigal** – for her piece on occupational exposures in men affecting women's reproductive health.
- **Dr. Deepti Gupta** – for expertly navigating genetic and X-linked disorders affecting future generations.
- **Dr. Neetah and I** – for co-authoring the topic of elderly male care and daughters as default caregivers.
- **Dr. Monika Gupta** – for giving a panoramic view of male mental health across the life span.
- **Dr. Ruche Bhargava** – for inspiring hope through her writing on positive masculinity and gender equity.
- **Dr. Prabhdeep Kaur** – for her assertive take on contraceptive responsibility and reproductive autonomy.
- **Dr. Ginny Gupta** – for showcasing the potential of technology and telehealth in couple care.

And my closing piece on policy and systems integration is an appeal to make men's health a women's issue in practice, policy, and funding.

Finally, my heartfelt thanks to **Mr. Bhupendra**, our ever-reliable designer, who gave visual life to every idea, layout, and page with creativity and dedication.

Together, we have created not just a magazine, but a movement. I hope this issue challenges your assumptions, deepens your empathy, and sparks meaningful conversations that lead to better, more holistic care for the women we serve—and for the men who impact their lives.

Warmly,
Dr. Asha Jain
Chairperson, FOGSI FDMSE Committee (2025–2027)

"Know Your Numbers" is an ambitious health initiative.

- This project seeks to gather vital health data- Weight, Blood pressure, Blood Sugar Level with HbA1C, and Hemoglobin level -from women across India.
- By focusing on these key health indicators, the project aims to foster a proactive health management culture among women.
- The data collected will be instrumental in identifying prevalent health issues early and promoting interventions that can significantly reduce the incidence of che diseases.
- This initiative not only emphasizes the importance of regular health monitoring but also strives to empower women with the knowledge and tools needed to take charge of their health, ensuring they lead longer, healthier lives.
- Collect key health data: weight, blood pressure, blood sugar, HbA1C, and hemoglobin from women across India.
- Encourage proactive health management for early identification of prevalent health issues.
- Promote timely interventions to reduce chronic disease incidence.
- Empower women with knowledge and tools for better health and longevity.
- Gather vital health data: weight, blood pressure, blood sugar (HbA1C), and haemoglobin levels from women across India.
- Foster proactive health management among women.
- Identify prevalent health issues early and promote timely interventions.
- Reduce the incidence of chronic diseases through regular monitoring.
- Empower women with knowledge and tools for healthier, longer lives.

SURVEY FOR KNOW YOUR NUMBER (KYN) PROJECT

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01

Nutrition, Vaccines, and Mother's Mental Load for the Boy Child

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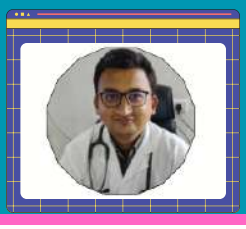

Introduction

The early years of a boy child's life critically shape his future health trajectory, significantly influenced by nutrition, timely immunisation, and the multifaceted responsibilities borne by the mother. These interconnected factors are fundamental determinants of growth, cognitive development, and long-term health outcomes. A comprehensive understanding of these aspects highlights the need for effective interventions and supportive strategies aimed at optimising developmental outcomes and reducing health disparities.

Nutrition: Laying the Foundation for Development

Nutrition is pivotal for healthy physical growth, cognitive function, and overall well-being. Early nutritional practices establish lifelong health trajectories, with each developmental phase presenting unique nutritional requirements.

Early Life Nutrition (0-6 months): Exclusive breastfeeding is globally endorsed as the optimal nutritional practice for the first six months of life. Breast milk provides a complete nutritional package comprising essential nutrients, immune-boosting antibodies, and probiotics beneficial for gut microbiome development. Boys, characterised by rapid early physical growth and neurodevelopment, require adequate quantities of protein, essential fatty acids, and micronutrients to support these developmental needs optimally. Exclusive breastfeeding significantly reduces infant morbidity and mortality by providing protection against common childhood illnesses such as diarrhoea, respiratory infections, and otitis media (1).

Complementary Feeding (6-24 months): Complementary feeding practices mark a crucial developmental milestone. Introducing diverse, nutrient-dense solid foods alongside continued breastfeeding becomes essential. Micronutrient deficiencies, particularly iron, zinc, and vitamin A, are prevalent during this transition period due to inadequate dietary diversity or inappropriate feeding practices. Boys, with typically faster growth rates, exhibit increased nutritional demands. Failure to meet these nutritional needs can result in severe consequences, including impaired cognitive development, physical stunting, and weakened immunity, making them vulnerable to infections and diseases later in life (2).

Nutrition Beyond Two Years: Sustaining optimal nutritional practices beyond infancy and early childhood remains critical for continuous physical growth, cognitive development, and disease prevention. Diets rich in fruits, vegetables, whole grains, lean proteins, and healthy fats are vital in meeting the evolving nutritional demands. Persistent nutritional deficiencies can negatively affect academic performance, social behaviours, and overall health, creating long-lasting implications into adulthood (3).

Impact of Malnutrition: Malnutrition, whether through undernutrition (stunting, wasting, and micronutrient deficiencies) or overnutrition (obesity), significantly compromises a child's growth and development. Chronic undernutrition, signified by stunting, irreversibly affects physical growth, cognitive function, and productivity. Conversely, childhood obesity increases the risk of chronic conditions, including diabetes, cardiovascular diseases, and psychological disorders, highlighting the importance of balanced dietary practices (2,3).

Vaccinations: Essential Protection for Life

Immunisation represents one of the most effective public health interventions, significantly reducing the incidence and impact of infectious diseases, particularly in vulnerable populations such as children.

Routine Immunisation Schedule: National immunisation schedules typically recommend vaccines against prevalent diseases, including measles, polio, diphtheria, pertussis, tetanus, tuberculosis, hepatitis B, Haemophilus influenzae type b, and rotavirus. These vaccines are crucial for the boy child, especially during infancy and early childhood, when susceptibility to severe infections is high due to an underdeveloped immune system (4).

Gender-Specific Vaccination Considerations: Traditionally, gender-neutral vaccination programs have been the norm. However, gender-specific vaccination, notably the Human Papillomavirus (HPV) vaccine, traditionally administered to girls, is now increasingly recommended for boys to prevent HPV-related cancers such as anal, penile, and oropharyngeal cancers, and to foster herd immunity. This broadened approach underscores the evolving recognition of equitable preventive health measures for boys and girls (5).

Vaccine Hesitancy and Coverage Challenges: Despite widespread immunisation efforts, vaccine hesitancy, misinformation, and inequitable access to healthcare services persist as significant barriers to achieving optimal vaccination coverage. Parental concerns, often driven by misinformation, can significantly affect vaccination uptake. Effective communication strategies, public awareness campaigns, and equitable healthcare provision are vital in addressing these challenges, ensuring comprehensive immunisation coverage for all children (4).

Mother's Load: The Invisible Burden

Mothers bear a substantial, often overlooked burden in ensuring the health and well-being of their children. This responsibility spans nutritional provisioning, healthcare management, emotional support, and financial management, significantly impacting their mental and physical well-being.

Nutritional Responsibilities: Mothers play an indispensable role in nutritional provisioning, involving breastfeeding, complementary feeding, and meal preparation. This responsibility demands considerable knowledge, time, and resources. A mother's nutritional status during pregnancy and lactation directly impacts her child's nutritional status, emphasising the importance of maternal nutritional health for optimal child development outcomes (1,3).

Healthcare Management: Ensuring timely immunisations, managing healthcare appointments, and navigating medical systems significantly add to maternal responsibilities. This is further complicated in resource-constrained settings with inadequate healthcare infrastructure, amplifying the logistical and emotional burden on mothers. Mothers are primarily responsible for healthcare decisions, necessitating extensive knowledge and proactive healthcare-seeking behaviour to maintain child health (4).

Emotional and Psychological Impact: The continuous stress associated with child health responsibilities profoundly affects maternal mental health, contributing significantly to maternal anxiety and depression. Maternal mental health, in turn, impacts caregiving behaviours, responsiveness, and the overall quality of child care, influencing child development outcomes significantly. Addressing maternal mental health is, therefore, crucial for improving child health and development outcomes (4,5).

Financial and Social Burdens: The financial implications associated with nutrition, healthcare, and caregiving predominantly impact mothers, often exacerbating existing financial stress. Societal norms place the primary caregiving responsibilities disproportionately on women, amplifying physical, emotional, and social pressures. The level of support provided by family members and the community significantly affects a mother's capacity to manage these responsibilities effectively (3,5).

Maternal Health and Its Impact: The health status of mothers, including nutritional status, chronic illnesses, and mental health, directly influences their caregiving abilities. Poor maternal health compromises breastfeeding quality, responsiveness to child's nutritional needs, and healthcare-seeking behaviours, ultimately negatively affecting child health outcomes. Ensuring comprehensive maternal healthcare and support is thus crucial for optimising child health and development (2,5).

Conclusion

The interplay between adequate nutrition, timely immunisation, and the significant maternal burden defines the health outcomes of the boy child. Comprehensive strategies that prioritise maternal health, nutrition education, robust vaccination programs, and supportive social systems are essential. Promoting gender-equitable caregiving responsibilities and providing adequate social and financial support to mothers will significantly enhance child health outcomes, ensuring healthier, well-developed children equipped for a productive and resilient future.

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02

Adolescent Brothers: Risk-Taking & Impact on Sisters' Safety

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Introduction:

Adolescence is a critical transitional period marked by self-discovery, exploration, introspection and ego establishment, where both positive and negative environmental influences tend to shape the lifelong psychology of the person. This foundation that serves as the child's first peer group has a major life-long impact on the dynamics of their future social interactions and development of human relationships. The influence of family and sibling equations becomes especially significant in families where an adolescent brother engages in high-risk activities, which may jeopardize his sister's psychological, emotional, and physical safety.

The adolescent brother: Trouble shooter or Trouble maker?

The psychological development of boys, shaped by their neurobiological processes, is unique. Their higher mental functions often drive them to make impulsive decisions, particularly in response to gender-specific societal norms and reward-seeking behaviours. This, compounded by testosterone surges during puberty, makes them vulnerable to engage in externalizing behaviours such as aggression and rebelliousness, including defiance of authority, which puts both them and their families at risk.

Role of siblings in one another's everyday experiences as companions, confidantes, combatants, and as the focus of social comparisons[1] is well documented. However, there is a growing need to acknowledge the collateral effect of adolescent brother's risk-taking behavior, especially on sisters sharing the same household.

Common unhealthy adolescent risk-taking behaviour in boys:

Physical and emotional	Substance abuse	Sexual	Digital	Social/Community
Fights/aggressive behaviour	Alcohol consumption	Risky sexual behaviour like unprotected intercourse, multiple sexual partners	Unsafe use of social media	Negative gender based social norms
Delinquent acts (e.g., theft, vandalism)	Tobacco/ Nicotine abuse	Sexual explorations and experiments that put sisters at risk	Cyber stalking/ Cyber bullying	Peer influence
Dangerous driving/ extreme stunts	Recreational drug abuse		Cyber voyeurism	Distorted Patriarchal beliefs and practices

The At-risk sister:

Girls in families where boys engage in high-risk behaviour face immense direct and indirect safety threats, emotional distress and reinforcement of harmful gender norms. This can distort their childhood memories and have a lifelong detrimental impact on their psychological, emotional, and personality development, as well as their perception of life and exercise of autonomy, while simultaneously posing serious life-threatening implications.

Risks to sister's safety:

1.Gender based risk taking behaviour

In families where teenage brothers indulge in activities which potentially or actually put themselves and their families at frequent risk, the sisters owing to their emotionally driven maternal instinct invariably takes up a submissive or protective role. Age old traditional gender hierarchies reinforce this behaviour, but unknowingly leads them to take up roles such as mediating, concealing, or at worst compensating for their brother's reckless behaviour within the family, and society at large.

The distorted normalization of aggressive and irresponsible male behaviour can impact the sister's future long-term relationships and what they advocate for themselves as adult women. These childhood traumas make them internalize the belief that their position in a family is that of an obligate "Emotional Caretaker". This premature parenting handicaps their ability of setting emotional boundaries for their future male partners or spouses.

2.Emotional and psychological safety

In such families, parents' attention and resources may have to be frequently directed towards saving the son and the family from trouble. The volatile environment at home leaves the sister neglected in terms of parental attention, love and care.

The apathy and solitude that ensues leaves the little girl feeling anxious, stressed, and scared[2]. Such a dysfunctional family environment adversely affects her personal growth, with damaging influences on her academics as well.

3.**Physical threat**

The brunt of a trouble maker brother's violent and aggressive behaviour may often be borne by a vulnerable sister at home, which in extreme cases may translate in actual physical or even sexual harm to the sister.

4.Sexual safety

Such a brother's peers and friends, often troubled adolescents like him, pose serious safety issues to sisters as unsafe guests or acquaintances. The extended friend circle may expose girls to drugs, physical and sexual violence or other extreme crimes such as human trafficking.

5.Substance abuse

A sister witnessing her brother or his friends consuming substances such as alcohol, tobacco, or recreational drugs may experience emotional distress, potentially leading her to adopt addictive behaviours as a means of coping with unresolved trauma. Additionally, exposure to and access to these unsafe substances—whether kept at home or elsewhere by the brother—increases her risk of falling in the trap of substance abuse.

6.Aggressive driving

Adolescent boys often engage in rash driving, influenced by on-screen stunts or a desire to assert dominance. This behaviour can place their sisters at risk—either as co-passengers vulnerable to accidents or as unintended targets during road rage incidents, where they may end up bearing the brunt or being scapegoated in conflicts.

7.Online abuse and cyber bullying

When an adolescent brother shares misogynistic or sexually objectionable content online, or engages in cyberbullying, his innocent sister often becomes collateral damage—experiencing shame, guilt, and social stigma within her peer group. Moreover, witnessing regular indulgence of her brother and his friends in online abuse can distort her perception of safe digital boundaries.

8.Peer influenced gender norms

Adolescent boys tend to learn gender specific norms and values that demean and objectify women from peers and the patriarchal society outside family. Then back home, they tend to exercise verbal abuse or controlling behaviour on their sisters. Unjustified rules and restrictions imposed, in the guise of providing protection curtails the girls freedom (of thought and expression) and independent decision-making capability. Gender discrimination leads to unequal, mostly unfair domestic duties as well as privileges.

9.Social Impact

A brother's reckless behaviour—whether it leads to social disgrace, stigmatization, judgment, or even criminal or legal action—can isolate the sister, damage her psychological well-being and impact her future. Additionally, older siblings are known to function as powerful socializing agents [3] affecting one another' s attitudes, behaviours, school success, even one another' s friendships[1]

<u>Strategies to protect the girls :</u>

1.**Role of schools** Life skills orientation programs for both genders should become a norm in schools. These programs aimed to sensitize students towards empathetic, respectful communication skills and effective conflict resolution strategies, should also address high-risk behaviours in adolescent boys.

Girls should be made aware about recognizing abuse or threats of any kind and learn to assert their personal boundaries with confidence. It should be the collective responsibility of schools, family members, and society at large to serve as reliable 'go-to' adults for adolescents, while also ensuring they have access to appropriate support groups and guidance resources.
Such sessions should be facilitated by trained professionals using modes such as role plays and focus not only on gender equality but also on deconstructing harmful masculine norms. When both the brother and sister learn gender equality at school, the same gender equations tend to be replicated at home.

2.Role of families:

Parents and other elders in the family should prioritize the overall well-being and health of girls by ensuring they receive proper nutrition. It is equally important to support their development in decision-making and emotional regulation, enabling them to navigate childhood adversities effectively. This foundation helps them grow into independent, self-reliant adults—professionally skilled, financially empowered, and capable of forming healthy, nurturing relationships that contribute to their personal and social growth.

3.Reproductive, sexual and menstrual health and hygiene:

Parents and guardians should ensure that both their male and female wards attend regular awareness sessions on Sexual and Reproductive Health and hygiene.
The RKSK[4] initiative of the Ministry of Health and Family Welfare is an attempt to holistically empower adolescents to take care of themselves, understand their own autonomy as well as of the others

4.Learning digital safety:

Girls need to be made digitally literate emphasizing on internet safety to minimize their digital vulnerability.

Conclusion:
The conduct of adolescent boys in families are known to have a lasting impact on the lives of their female siblings. Recognizing the gendered impact of male adolescent risk taking is crucial for building a society where our girls feel supported and validated. We as a society need to commit to encourage building support systems and making them accessible to both adolescent boys and girls to shape emotionally resilient and wholesome adults to build a bright future ahead.

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03

Son's Learning Disorders And Maternal Burn Out

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"Burn-out is a syndrome conceptualized as resulting from chronic stress that has not been successfully managed.
It is characterized by three dimensions: feelings of energy depletion or exhaustion, increased mental distance, and reduced professional efficacy .Parental burnout(PB)is created by a perceived disconnect between parenting resources and obligations, and it has a slew of negative repercussions for both parents and children.

Parental burnout includes the following symptoms and manifestations: emotional detachment from the child, the demoralizing feeling that one is not doing enough as a parent, and the overwhelming sense of continuous parental obligations toward a child with a neurodevelopmental disorder, including the necessity of expanding a great deal of time and effort above and beyond normal parenting responsibilities including at the expense of other siblings and the parents' own time, career goals, and relationships.

Neurodevelopmental disorders (NDDs) are disabilities in brain functioning that cause impairments in cognition, communication, behavior, and sometimes motor skills. The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) defines several neurodevelopmental disorders in children, including attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), various learning disabilities, and intellectual disability (ID) . Neurodevelopmental disorders can be life-long conditions. The parents and developmental disabilities (DD) results of ADHD children suggest higher stress results compared to other diseases, i.e., HIV and special behavior children.

Parental burnout can be quite harmful and lead to suicide and escape ideations in children, which are far more common in parental burnout than in work burnout or even depression. Parentral stress levels were high unsurprising considering that one cannot resign from a parental role or be placed on sick leave from one's children. Parental burnout is linked to psychological forms of escapism, such as alcohol usage, in addition an increased need to physically escape from the parenting environment .Parental burnout causes dysregulation in the hypothalamic pituitary adrenal (HPA) axis and somatic complaints and sleeping disordered reported by burned-out parents; however, in child-directed violence significantly increased. Parenting stress is linked to parenting practices and child development more than other types of stress High levels of parenting stress can severely impact the parent–child connection and parenting practices.

Due to large changes in routines and service availability, children with NDDs may be particularly prone to stress. This includes the inability to attend school and a decrease in the availability of formal and informal support, such as limited interaction with close or extended family members. In addition, mental health was affected due to a lack of options for physical activity, and other health issues such as obesity and sleep disorders were reported among NDD child parents. Parents of children with NDDs were at a higher risk of depression and anxiety compared with parents of children without NDDs.

Managing self-injurious behavior in children with NDDs is often frustrating because of the refractory nature of the behaviors commonly associated with these disorders. The lack of accessibility to services in public places is one of the myriad stressors faced by parents of children with moderate-to-severe neurodevelopmental disorders. The feeling of isolation or not being accepted as well as the stigma of not being within the "norm" is another form of stress commonly experienced by parents.

Mothers of children with ASD suffer more anxiety than fathers of children with ASD. Parental burnout can make it difficult for parents to cope due to its severity and chronicity. However, positive adaptations can help decrease stress and enhance the resilience of parents of children with neurodevelopmental disorders.

Detecting and treating parental anxiety and reducing stressors that may lead to burnout could play a positive role in treating children with neurodevelopmental disorders, many of whom could have excellent prognostic trajectories with the right treatment. Parenting children With Special Needs and Disabilities (W-SND) demands long-term care over and above routine parenting requirements. Parents can utilize protective resources against PB, such as high emotional intelligence, self-compassion, positive thinking, appropriate management of leisure time, high parental skills, and environmental and societal support. Conversely, parents have a higher risk of PB if they attempt perfectionism in parenting are prone to neuroticism, i.e., emotional imbalance have low emotional intelligence, tend to pessimistic thinking, lack child-rearing skills, and lack social and emotional support.

STRATEGIES TO COPE UP PB

1.Deep EW helps reduce burnout resulting from a perceived caregiver burden.

2. Learned resourcefulness is a cognitive-behavioral resource that includes a repertoire of skills with which a person can regulate internal events (e.g., pain, emotions, unwanted thoughts, anxiety, and depression) to achieve better control over the effects these events might have on their behavior

3. Social support is an exchange of resources, information, and assistance between at least two people, from official and unofficial sources, to maintain one's well-being . People are motivated throughout their life to hold, preserve and protect their personal resources.

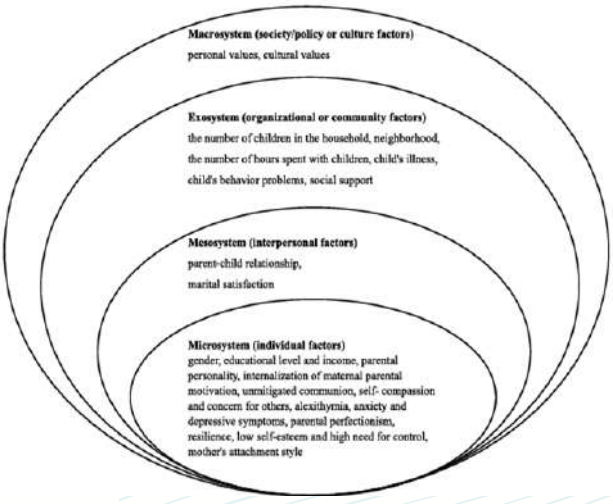
4.According to the ecosystem theory, the environment that influences health behaviors can be classified into microsystem (individual factors), mesosystem (interpersonal factors), exosystem (organizational or community factors), and macrosystem (society/policy or culture factors). Considering the huge impact of parenting burnout on the three sides of the parent, child, and family as mentioned above, this study aims to systematically assess the associated risk and pro tective factors for parenting burnout among parents with children aged 0-18 years based on the ecosystem theory. T he findings of this study are expected to assist health care professionals and policymakers in identifying the mental health requirements of parents who are experi encing parenting burnout and offering them comprehen sive care and support

5.Alexithymia is a risk factor for parenting burnout in parents of children with autism. People with high levels of alexithymia feel more psychological stress and are more likely to intrinsically use ineffective methods such as avoidance and self-blame to mask the stress so they feel more burnout. Mindful meditation may lessen alexithymia by changing how physical and emotional experiences are perceived. Additionally, alexithymia can be efficiently changed by enhancing emotional expression. In order to decrease parental burnout, it is possible to cultivate parents' emotional sensitivity through arts learning

6. Higher levels of literacy are associated with lower levels of parenting burnout. Parents with a high level of education can approach the stress of parenting in a more logical way, adopt scientific methods to seek assistance and deal with issues that arise during the parenting .Economic status is an important factor in parenting burnout, especially for parents of sick children, and an adequate monthly income can pay for treatment and reduce the burden of parenting Therefore, it is recommended that the government should increase their welfare benefits and reimbursement of treatment costs.

7.Higher levels of family disintegration and conflict and lower levels of marital satisfaction, are associated with a higher risk of parental burnout. Family members should try to stay united always.

FIGURE 1 RISK FACTORS FOR PARENTAL BURNOUT



Therefore ,the construction of a multi-dimensional support system with the participation of multiple parties, including family, school, community and government, is highly recommended.

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04 Brother's Lifestyle Diseases, Sister's Genetic & Shared- Environment Risks

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1. Introduction

Lifestyle-related diseases such as type 2 diabetes (T2D), hypertension, cardiovascular disease (CVD), and obesity tend to cluster within families. This familial aggregation results from a complex interplay of shared genetics, common environmental exposures, and similar health behaviour. As full siblings typically share about half of their genetic makeup and are raised in comparable environments, the presence of a lifestyle disease in a brother serves as a significant indicator of increased health risk for his sister.

2. Heritability and Lifestyle Diseases

2.1. Genetic Contribution

Twin and family studies suggest substantial heritability for several chronic conditions:

- Type 2 Diabetes: Heritability ranges between 30% and 70% 1
- Obesity (BMI): Estimates indicate 70–80% heritability 2
- Hypertension and CVD: Familial clustering in lifestyle diseases is supported by longitudinal studies3

2.2. Genetic Markers

Genome-wide association studies (GWAS) have uncovered loci such as FTO (obesity), TCF7L2 (T2D), and PCSK9 (dyslipidaemia), though individual SNPs contribute modestly to overall disease risk 4.

2.3. Sibling Risk Estimates

- Risk of hypertension is two to three times higher among siblings of affected individuals 5
- Male siblings with early coronary artery disease present a markedly higher risk profile 6

3. Shared Environmental Influences

3.1. Early-Life and Socioeconomic Determinants

Maternal health, fetal nutrition, and socioeconomic status can exert long-term effects on chronic disease vulnerability 7.

3.2. Household Behaviors and Culture

Shared dietary patterns, physical inactivity, and tobacco or alcohol use within families are pivotal behavioral risk factors.

3.3. Social and Structural Factors

Community resources, healthcare access, and cultural norms shape health behaviors and outcomes within families.

4. Gene–Environment Interactions

4.1. Interactive Risk Models

Gene–environment models underscore how genetic susceptibility can be influenced or mitigated by lifestyle choices 8.

4.2. Cardiovascular Disease

Data show that individuals with high genetic predisposition to CVD who maintain a healthy lifestyle significantly reduce their risk, demonstrating that genetic risk is modifiable 9.

4.3. T2D and Obesity

While T2D and obesity have strong heritable components, environmental influences such as poor diet and sedentary behavior are often required for disease manifestation (1,2).

5. Clinical Implications for Sisters

5.1. Genetic Susceptibility

Sisters of affected brothers share numerous risk alleles, especially those associated with metabolic and cardiovascular conditions.

5.2. Common Early-Life Exposures

Shared prenatal and early childhood environments, including maternal metabolic status, elevate long-term risk 7.

5.3. Family Health Behaviors

Siblings often adopt similar dietary and physical activity patterns, further influencing shared health outcomes.

5.4. Relative Risk Assessment

- CVD risk is approximately doubled if a male sibling is affected
- Risk of T2D increases three- to four-fold 1
- Elevated likelihood of obesity and hypertension, especially with parental history

6. Recommended Clinical Approaches

6.1. Early Screening Protocols

Proactive screening—beginning 5–10 years earlier than standard guidelines—is advised for sisters of affected brothers. This includes regular monitoring of glucose, lipids, blood pressure, and anthropometric indices.

6.2. Integrated Family-Based Programs

Family-centered interventions targeting nutrition, exercise, and lifestyle modifications can foster collective risk reduction.

6.3. Genetic Counselling and Risk Stratification

Families with multiple early-onset cases may benefit from genetic evaluation and polygenic risk scoring.

6.4. Epigenetic Risk Factors

Evidence suggests maternal hyperglycaemia and stress exposures may cause epigenetic alterations that affect both siblings' long-term metabolic health 10.

7. Advances in Precision Prevention

7.1. Polygenic Risk Scores (PRS)

PRS can stratify individuals based on inherited risk, guiding earlier and more personalized preventive efforts 4.

7.2. Epigenetic Therapeutics

Experimental therapies targeting DNA methylation and miRNA regulation are showing promise in reversing early disease programming 10.

7.3. Machine Learning in Genomic Research

AI models now assist in identifying complex gene–gene and gene–environment interactions, enhancing predictive accuracy 4.

7.4. Early-Life Genomic Screening

Emerging technologies such as whole-genome sequencing may eventually allow early detection of monogenic and polygenic contributors to disease.

7.5. Digital Risk Monitoring

AI-enabled retinal imaging and other non-invasive diagnostics are being explored for early detection of systemic disease risk.

8. Conclusion

A brother's diagnosis of a lifestyle-related condition significantly elevates his sister's risk profile due to shared genetic, epigenetic, and environmental influences. Advances in genomics and artificial intelligence offer increasingly sophisticated tools for early risk detection and intervention. A comprehensive clinical approach incorporating family history, behavioral assessment, and precision medicine strategies is essential for effective prevention.

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05

Paternal Mental Illness and Daughter Outcomes

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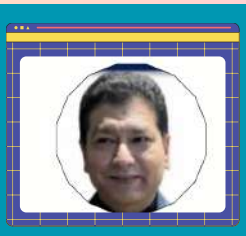

Introduction

The study of parental mental illness and its repercussions on child development has historically been dominated by a focus on maternal mental health. This is understandable, given the primary caregiving role mothers have traditionally occupied and the profound biological connection during gestation and early infancy. However, the landscape of familial roles and our understanding of developmental psychopathology has evolved significantly. There is a growing research on understanding the unique and substantial influence fathers have on their children's emotional, cognitive and social development. Consequently, the impact of paternal mental illness, once a relatively neglected area, is now gaining crucial recognition.

Fathers are not merely secondary figures; their engagement, behaviours and emotional availability contribute critically to the family system and directly shape their children's experiences and developmental trajectories. When a father struggles with a mental illness such as depression or bipolar disorder, the effects can ripple through the family, with distinct implications for his offspring. This chapter will specifically explore the impact of paternal depression and bipolar disorder on daughter outcomes. The focus on daughters is pertinent as developmental pathways and vulnerability to certain psychopathologies can be gender-specific and the father-daughter relationship possesses unique dynamics that may be particularly affected by paternal mental illness.

We will delve into the prevalence and manifestation of these disorders in men, the mechanisms through which paternal mental illness influences daughters (including genetic predispositions, altered parenting practices, and the creation of stressful family environments) and the specific developmental and psychological outcomes observed in daughters. Furthermore, we will consider moderating and mediating factors that can exacerbate or buffer these effects and discuss potential avenues for intervention and support. By shedding light on this important area, this chapter aims to contribute to a more holistic understanding of intergenerational mental health and to advocate for family-centred approaches to care that acknowledge and address the mental health needs of fathers.

Paternal Depression and Daughter Outcomes

Paternal depression is a significant public health concern, with prevalence rates estimated to be comparable to, or in some cases exceeding, those for maternal depression during the postpartum period and beyond. Estimates suggest that up to 10-12% of fathers experience depression, particularly during the first year of a child's life, and these rates can be higher in the context of maternal depression.

However, depression in men often manifests differently than in women. While sadness and tearfulness are classic symptoms, men may be more likely to exhibit irritability, anger, withdrawal, anhedonia (loss of interest in previously enjoyable activities), risk-taking behaviours or somatic complaints. This atypical presentation can lead to under-diagnosis and under-treatment, meaning many fathers suffer in silence and their families bear the brunt of their untreated illness.

The mechanisms through which paternal depression impacts daughters are multifaceted:

1.**Genetic Transmission:** Mood disorders have a known genetic component. Daughters of depressed fathers may inherit a genetic vulnerability that increases their own risk of developing depression or other mental health problems. This risk is not deterministic but represents an increased susceptibility.

2.**Parenting Behaviours and Father-Daughter Interaction:** Depressed fathers often exhibit altered parenting styles. They may be less engaged, more withdrawn and less responsive to their daughters' emotional needs. Play interactions might be less frequent, less stimulating or characterized by negativity and intrusiveness. Depressed fathers may also be more critical, irritable or hostile, leading to a strained and less secure father-daughter relationship. For daughters, this can translate into feelings of rejection, insecurity and a diminished sense of self-worth. The warmth, support and positive engagement typically provided by a father which are crucial for healthy emotional development may be compromised.

3.Modelling: Children learn by observing their parents. Daughters may observe and internalize their father's depressive behaviours, lack coping mechanisms and have negative cognitive styles. For instance, a father who consistently expresses hopelessness or views the world through a negative lens may inadvertently teach his daughter similar patterns of thinking and reacting to stress.

4.Family Environment: Paternal depression can contribute to a stressful and conflict-ridden family environment. Marital discord is more common when one or both partners are depressed. Financial strain and social isolation can also be exacerbated. Daughters growing up in such environments are exposed to chronic stress which is a known risk factor for a wide range of negative developmental outcomes.

5. Indirect Effects via Maternal Well-being: Paternal depression can negatively impact maternal mental health. A mother coping with a depressed partner may experience increased stress and reduced support, which can affect her parenting and her own emotional availability to her daughter.
Specific outcomes observed in daughters of depressed fathers are varied and can manifest across different developmental stages:

- **Internalizing Disorders:** Daughters of depressed fathers are at a significantly higher risk for developing depression themselves, often with an earlier age of onset. They also show increased rates of anxiety disorders, including generalized anxiety, social anxiety and separation anxiety. This heightened vulnerability to internalizing symptoms is one of the most consistently reported findings in the literature.

- **Externalizing Disorders:** While less consistently reported than internalizing problems, daughters of depressed fathers may also exhibit increased externalizing behaviours, such as conduct problems or oppositional defiant disorder, particularly if the father's depression is characterized by irritability and hostility.

- **Emotional Regulation:** Difficulties in emotional regulation are common. Daughters may struggle to manage their emotions effectively, showing either excessive emotional reactivity or emotional blunting.

- **Social Functioning:** Impairments in social competence, difficulties in peer relationships and social withdrawal have been noted. A less secure attachment with the father, stemming from his depressive symptoms, can impact the daughter's ability to form healthy relationships later in life.

- **Cognitive and Academic Performance:** Some research suggests potential impacts on cognitive development and academic achievement, possibly mediated by reduced paternal stimulation, a stressful home environment or the daughter's own co-occurring emotional difficulties.

- **Physical Health:** Chronic stress associated with parental depression can have long-term physiological consequences, potentially increasing vulnerability to certain physical health problems.

The timing of paternal depression also matters. Depression experienced by fathers during a daughter's early childhood and adolescence—critical periods for emotional and social development—may have particularly salient effects.

Paternal Bipolar Disorder and Daughter Outcomes

Paternal bipolar disorder (PBD) presents a different and often more complex set of challenges for daughters. Bipolar disorder is characterized by extreme shifts in mood, energy, activity levels and concentration, ranging from depressive lows to manic or hypomanic highs. During depressive episodes, fathers with PBD may exhibit symptoms similar to those with major depressive disorder – withdrawal, sadness, irritability and low energy. However, manic or hypomanic episodes introduce another layer of unpredictability and potential disruption. These episodes can involve elevated mood, grandiosity, racing thoughts, impulsivity, decreased need for sleep, risk-taking behaviour and sometimes psychosis.

The impact of PBD on daughters is influenced by several factors:

1. Stronger Genetic Loading: Bipolar disorder has one of the highest heritability rates among psychiatric disorders. Daughters of fathers with bipolar disorder have a substantially increased lifetime risk (estimated to be 5-15 times higher than the general population) of developing bipolar disorder themselves as well as other mood disorders like major depression or anxiety disorders.

2. Chaotic and Unpredictable Environment: The cyclical nature of bipolar disorder can create a highly unpredictable and often chaotic home environment. Daughters may struggle to understand or cope with their father's fluctuating moods and behaviours. A father who is engaging and energetic one week might be withdrawn and irritable in next week or vice-versa. This inconsistency can be deeply unsettling and frightening for a child, undermining her sense of security and stability.

3.Parenting Impairments: Parenting capacity can be severely compromised during both depressive and manic/hypomanic phases.

- **During Depressive Episodes:** Similar to fathers with unipolar depression, fathers with PBD may be emotionally unavailable, withdrawn and neglectful.

- **During Manic/Hypomanic Episodes:** Fathers may be intrusive, overly stimulating, exhibit poor judgment or engage in impulsive behaviours that put the child at risk (e.g.reckless spending, erratic driving, inappropriate social conduct). They might have unrealistic expectations for their daughters or involve them in age-inappropriate activities. Discipline can be inconsistent, ranging from lax to overly harsh

4. Exposure to Risky Behaviours and Trauma: Manic episodes can be associated with increased risk-taking, substance abuse and impulsive aggression. Daughters may witness or be directly affected by these behaviours, potentially leading to traumatic experiences. The risk of neglect or even abuse can be heightened during severe mood episodes if appropriate supports are not in place.

5. Stigma and Social Isolation: Families dealing with bipolar disorder often face significant stigma which can lead to social isolation for both the father and the daughter. Daughters may feel ashamed or embarrassed by their father's illness, making it difficult to discuss their experiences or seek support from peers.

6. Impact on Marital Relationship: Bipolar disorder places immense strain on marital relationships. High rates of marital conflict and divorce are common, further destabilizing the daughter's environment.

Outcomes for daughters of fathers with bipolar disorder can be severe and wide-ranging:

- **Increased Risk of Mood Disorders:** There is a significantly elevated risk for bipolar disorder and major depressive disorder. Early-onset mood disorders are also more common in these offspring.

- **Anxiety Disorders:** High rates of anxiety disorders including panic disorder and social phobia are frequently observed.

- **Disruptive Behaviour Disorders:** Some daughters may develop externalizing problems such as ADHD, conduct disorder or oppositional defiant disorder, possibly as a response to the chaotic environment or as an early manifestation of their own underlying vulnerabilities.

- **Sleep Disturbances and Circadian Rhythm Dysregulation:** Given the link between bipolar disorder and circadian rhythm abnormalities, daughters may also be vulnerable to sleep problems.

- **Impaired Psychosocial Functioning:** Difficulties in academic performance, social adjustment and forming stable interpersonal relationships are common. They may struggle with emotional dysregulation, impulsivity and coping skills.

- **Parentification:** Daughters may take on caregiving responsibilities for their ill father or for other family members leading to "parentification" where they assume adult roles prematurely, sacrificing their own childhood needs.

- **Higher Rates of Substance Use:** Offspring of parents with bipolar disorder are at increased risk for developing substance use disorders potentially as a form of self-medication or due to shared genetic vulnerabilities.

The severity of the father's illness, the presence of psychotic features, comorbid conditions (like substance abuse) and the level of insight and treatment adherence, all play crucial roles in determining the extent of the impact on his daughter.

Moderating and Mediating Factors

The relationship between paternal mental illness and daughter outcomes is not deterministic. Several factors can moderate (influence the strength or direction of the relationship) or mediate (explain the process through which the relationship occurs) these effects:

1. Maternal Mental Health and Parenting: The mental health and parenting quality of the mother are critical. A mother who is mentally healthy, provides consistent and supportive parenting and can buffer the daughter from the negative effects of the father's illness, can be a significant protective factor. Conversely, if the mother also struggles with mental health issues or if her parenting is compromised, the risk for negative outcomes in the daughter increases substantially.

2. Socioeconomic Status (SES): Lower SES can exacerbate the impact of paternal mental illness by adding financial stress, limiting access to resources and treatment and increasing exposure to neighbourhood adversity. Higher SES may provide access to better healthcare, educational opportunities and other supports that can be protective.

3. Social Support: The availability of strong social support networks for the father, the mother and the daughter can be a crucial buffer. Support from extended family, friends, school personnel or community organizations can provide emotional, practical and informational assistance.

4. Severity and Chronicity of Paternal Illness: More severe, chronic or poorly managed paternal mental illness is generally associated with worse outcomes for daughters. The presence of comorbid conditions (e.g.substance use, personality disorders) in the father can also intensify the negative impact.

5. Father's Treatment Engagement and Insight: When fathers are aware of their illness, actively engaged in treatment (medication, therapy) and work to manage their symptoms, the negative impact on their daughters can be significantly reduced. Insight into how their illness affects their family is also important.

6. Daughter's Temperament and Resilience Factors: Individual characteristics of the daughter, such as an easy temperament, good coping skills, intelligence and a strong sense of self-efficacy can promote resilience and protect against adverse outcomes.

7. Quality of the Father-Daughter Relationship (when father is stable): If there are periods when the father is stable and able to foster a positive relationship with his daughter, can be a protective factor even in the case of recurrent illness.

8. Family Functioning and Cohesion: A family environment characterized by open communication, mutual support and effective problem-solving, despite the challenges of paternal mental illness, can mitigate negative impacts.

Protective Factors and Interventions

Recognizing the profound impact of paternal mental illness on daughters necessitates a multi-pronged approach to intervention and prevention:

1. Early Identification and Treatment for Fathers: Increased awareness and screening for mental illness in fathers particularly during the perinatal period and in primary care settings is crucial. Destigmatizing male help-seeking and providing accessible, male-friendly mental health services are essential. Effective treatment for paternal depression or bipolar disorder (including psychotherapy, medication and support groups) is the first line of defence in protecting daughters.

2. Family-Centred Approaches: Interventions should ideally involve the entire family. Family therapy can help improve communication, reduce conflict and enhance coping strategies for all members. Psychoeducation for family members including daughters (in an age-appropriate manner) about the father's illness can foster understanding and reduce self-blame.

3.Supporting the Co-Parent (Mother): Providing support to the mother is vital. This can include individual counselling, parenting support programs and respite care to help her manage her own stress and maintain effective parenting.

4. Direct Support and Interventions for Daughters:

- **Psychoeducation:** Helping daughters understand their father's illness can alleviate confusion, fear and self-blame.

- **Individual or Group Therapy:** Daughters at high risk or already showing symptoms can benefit from therapeutic interventions (e.g. CBT, interpersonal therapy) to build coping skills, address emotional and behavioural problems and enhance resilience.

- **Support Groups for Children of Parents with Mental Illness:** These groups can provide a safe space for daughters to share their experiences, reduce feelings of isolation and learn from others in similar situations.

5. Strengthening Parenting Skills: Parenting programs specifically designed for fathers with mental illness can help them develop strategies to manage their symptoms while maintaining positive and engaged parenting. Co-parenting interventions can help parents work together more effectively.

6. School-Based Support: Schools can play a role by providing a supportive environment, identifying at-risk children and offering counselling or referrals.

7. Promoting Resilience: Interventions should focus not only on mitigating risk but also on fostering resilience factors in daughters, such as strong social skills, problem-solving abilities, a positive self-concept and supportive relationships outside the family.

Conclusion

The mental health of fathers is inextricably linked to the well-being of their daughters. Paternal depression and bipolar disorder can cast long shadows, increasing daughters' vulnerability to a range of adverse psychological, emotional and social outcomes. The mechanisms are complex, involving genetic predispositions, the direct impact of impaired parenting and a stressful family environment and indirect effects through the broader family system.

However, the trajectory is not immutable. Understanding the specific risks associated with paternal depression and bipolar disorder allows for targeted interventions. A family-systems perspective is paramount, recognizing that supporting the father's mental health, empowering the co-parent and providing direct assistance to the daughter are all critical components of effective care. Early detection of paternal mental illness coupled with accessible and tailored treatment for fathers is a fundamental step in mitigating intergenerational transmission of psychopathology. Furthermore, fostering resilience in daughters and strengthening protective factors within the family and community can help buffer against the potential negative consequences.

Continued research is needed to further elucidate the nuanced pathways of influence, particularly the gender-specific effects on daughters and to develop and evaluate effective, family-cantered interventions. By acknowledging and addressing the unseen impact of paternal mental illness, we can move towards a future where all children, regardless of their parents' mental health struggles, have the opportunity to thrive.

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06

The Alcohol-Dependent Father: Family Economics, Violence & Stigma

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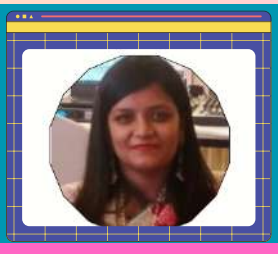

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Stigma towards alcohol use disorders is prevalent in India and can lead to social exclusion and hamper treatment access and outcomes. Father's alcohol dependence negatively affects family finances, increases violence, and leads to stigma. Alcohol problems are often perceived as a dysfunction reflective of the larger family unit, particularly in India where it is common to live with one's in-laws in a traditional 'joint family' structure. Within Indian families (since alcohol dependency is more common among men), primary caregiving duties such as providing home treatment, administering medication, seeking out sources of care and monitoring treatment adherence are typically borne by the women in the home (mother, wife, sister). The caregiving role can be particularly burdensome for women, characterised by financial strain, frequent quarrels, disruptions in daily life, perceived neglect, deteriorating mental health and domestic violence.

The effects of alcohol abuse and alcoholism are as damaging to our nation's economy as they are to our nation's health. No single segment of our society is untouched by this phenomenon-not the young, not the middle eaged, not the elderly. Our children are our hope for the future; it is they who are going to keep our country strong. If we are to maintain our high wage-based economy, today's children are going to have to be prepared to face some of the most difficult challenges in the future. We currently compete in a tough international marketplace for goods and services. That marketplace will become even more competitive as the global market expands. As this new generation reaches adulthood, it will need to have more flexible skills and an increased ability to sustain peak performance levels in order to roll with the high technology punches and to successfully compete in the international marketplace with countries like Japan.

People affected by the drinking of near and dear ones

People affected by the drinking of near and dear ones The Consumption of alcohol affects the near and dear one's of families and it's also cause the whole family to feel like they are under constant stress. Family members of those who struggle with alcohol abuse need to learn to practice self-care. In a family the most affected members are the spouse. It gives a negative effect on the spouse of an alcoholic person and the stress of living with alcoholic is registered in the body. There is a physical response to fear, to anxiety, to guilt, self-pity, to worry and result of all these are high blood pressure, breathing difficulties and migraine etc. Alcoholism affects the children in a manner that they require positive role model and stability to move their life but with alcoholic family members they can lack this. They will see arguments with parents affecting their psychological welfare.

When the life of a family is not predictable because of the alcoholic person behavior then family reorganizes itself around new unhealthy rules, roles and protect it from breakdown. One of the sad facts of living with an alcoholic is that wife became emotionally and mentally sick as the alcoholic. The reason for this is that in every stage of life she takes and every breathe of air they breathe is related to some involvement with the alcoholic. Their emotions overtake their own mental health as they try and cope with the deterioration of the alcoholic in their life.

Families coping with alcoholic

How a family can cope up when loved one has alcoholism. To start with the first thing is to educate you with alcoholism. As a member of family emotions is to be manage wisely. The wives of alcoholic person s live with enormous amount of nervous tension. Darwin's theory emphasizing the "struggle for survival" and an increasing emphasis on behavioral problem-solving activities, laid the foundation for "coping" According to Lazarus" Stress itself as a concept plays less significance for adaption compared for coping." "All of us have experienced in our lives that cause stress". Horgan said, it is important that people have more than a way to manage that stress. Therefore, guidance on how to handle stress by the use of various coping strategies is important. It has been observed that there are no ways were one can make their loved one quit drinking. And wife of an alcoholic has no control over their husband's choices but they do have controls of their own.

Impact on finances of alcohol addict

Alcohol is soluble in water and easily enters bloodstream moving towards various parts of body and it is faced by the brain most impacting reward centre and logic plus memory centre which makes a drinker feel to forget trouble and relax senses, which leads to slowly increased growth of intake. While analysis of finances clearly stated that increased expenses on alcohol was not the criteria of being an addict, many occasional drinkers spend more than regular drinkers due to choose of their drinks, community and place which they choose. Alcoholism in India has taken a growth in past few years, earlier a social stigma of drinking alcohol being a bad habit has seen a paradigm shift as status symbol and drinkers have it to show them as 'cool". The liberalized market of India had given boost to this industry and due to it, alcohol is available easily at affordable price. NSSO report of 2011-12 states that consumption in rural India increased around 28% in comparison urban India grew only 14%.

Occasional drinkers do not have tendency of over spending but people who are regular and do not limit themselves generally have a poor balance sheet. Generally, it is found that a person under addiction of alcohol recognizes his addiction at a very later stage by that time balance sheet would take a bad shape. Multiple expenses arise due to alcohol are: They tend to make expenditure under influence of liquor, they make a friend circle of such kind and as they order food and drinks under influence of others and alcohol. Around 70% of the respondents accepted that more than 50% of their annual budget is spent on alcohol and related items due to these addicts in the family. 9.48% respondents even agreed that legal expenses took 1% to 2% of their budget due to accidents caused by them on road, fights, police etc. Expenses on health increased as alcohol impacts the health of addict around 50% of

respondent accepted the increase of expenses in health section of their household budget. Too much of alcohol can lead to liver damage, falling sick frequently, sometime they face accident hospitalization fees and medication expenses increases. Under influence of alcohol people tend to gamble more, it can be easily seen that most of the bars and casinos offer drinks at reasonable rate. Slowly reduced work efficiency reduces their earning capacity and work place acceptance; many are the times the face demotions or are sent out of the organization due to reduced efficiency. At work place addicts' absences, decreased productivity, carelessness, work culture imparity aggressive behavior at work place-physical or verbal leads to financial hardships.

ALCOHOL AND DOMESTIC ABUSE/VIOLENCE

There is a strong evidence linking alcohol with domestic abuse or domestic violence (Gadd et al., 2019). Alcohol has been associated with violent crimes and domestic violence across many nations. Various etiological factors were linked to chronic alcohol use and violence including psychiatric comorbidities of perpetrators such as personality disorders, mood disorders, and intermittent explosive disorders. Aggression is the precursor of violence and individuals prone to aggressive behaviors are more likely to commit impulsive violent crimes, especially under the influence of alcohol. Findings from brain studies indicate long-term alcohol consumption induced morphological changes in brain regions involved in self-control, decision-making, and emotional processing. In line with this, the inherent dopaminergic and serotonergic anomalies seen in aggressive individuals increase their susceptibility to commit violent crimes when alcohol present in their system. In relation to this, this article intends to investigate the influence of alcohol on aggression with sociopsychological and neuroscientific perspectives by looking into comorbidity of personality or mood disorders, state of the mind during alcohol consumption, types of beverages, environmental trigger, neurochemical changes, and gender differences that influence individual responses to alcohol intake and susceptibility to intoxicated aggression.

Percentage of women age 15-49 who drink alcohol and percent distribution of alcohol drinkers by frequency of drinking according to background characteristics, India, 2019-21

Background characteristic	Percentage of women who drink alcohol	Number of women	Among women who drink alcohol, frequency of drinking: Almost every day	About once a week	Less than once a week	Total	Number of women
Age							
15-19	0.2	122,544	6.3	24.6	69.1	100.0	238
20-34	0.6	336,968	12.8	33.8	53.3	100.0	2,040
35-49	1.2	264,603	20.4	39.2	40.4	100.0	3,123
Residence							
Urban	0.4	235,279	11.3	25.6	63.1	100.0	991
Rural	0.9	488,836	18.1	39.0	42.8	100.0	4,409
Maternity status							
Pregnant	0.4	27,125	12.6	28.7	58.7	100.0	111
Breastfeeding (not pregnant)	0.6	100,596	17.3	36.0	46.7	100.0	589
Neither	0.8	596,394	16.9	36.8	46.3	100.0	4,700
Schooling							
No schooling	1.8	163,492	23.1	41.6	35.4	100.0	2,974
<5 years complete	1.0	37,549	15.6	38.8	45.6	100.0	380
5-7 years complete	0.5	96,806	13.6	34.5	51.9	100.0	529
8-9 years complete	0.4	129,094	7.9	33.9	58.2	100.0	501
10-11 years complete	0.3	109,777	8.4	26.1	65.5	100.0	305
12 or more years complete	0.4	187,396	4.3	22.2	73.5	100.0	713
Religion							
Hindu	0.8	589,164	15.8	37.2	46.9	100.0	4,650
Muslim	0.0	97,595	24.7	24.3	51.0	100.0	48
Christian	2.1	16,995	14.1	35.0	50.9	100.0	360
Sikh	0.2	11,404	8.0	9.6	82.4	100.0	18
Buddhist/Neo-Buddhist	1.7	4,571	7.4	32.9	59.7	100.0	78
Jain	0.5	1,632	8.2	16.8	75.2	100.0	9
Other	8.6	2,754	44.5	32.0	23.5	100.0	237
Caste/tribe							
Scheduled caste	0.5	158,483	19.1	33.8	47.1	100.0	845
Scheduled tribe	3.9	67,263	18.0	41.9	40.0	100.0	2,590
Other backward class	0.4	310,783	16.2	33.6	50.2	100.0	1,297
Other	0.3	182,474	10.2	24.4	65.4	100.0	625
Don't know	0.9	5,112	22.2	33.5	44.3	100.0	44
Wealth index							
Lowest	1.9	133,973	19.6	42.9	37.4	100.0	2,600
Second	0.7	144,813	18.7	37.1	44.2	100.0	1,054
Middle	0.5	148,616	17.5	33.6	48.9	100.0	710
Fourth	0.3	150,680	11.7	26.2	62.1	100.0	468
Highest	0.4	146,032	4.6	18.5	76.9	100.0	569
Total	0.7	724,115	16.9	36.6	46.6	100.0	5,401

2019-21 India National Family Health Survey [FR375]

we can turn this trend around, and someday prove the forecasters wrong, if we work hard and together to raise public awareness of the costs and consequences of our alcohol-related problems and if we channel this awareness, this heightened concern, into programs of research, prevention, and treatment that leave no room for anyone to doubt the seriousness of our intentions. Alcohol abuse and alcoholism, we must all come to understand, are problems we can no longer afford, or ignore. The time for effective intervention is now.

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07 Male substance use & Domestic Violence - Obstetrics and Gynecologic Fallout.

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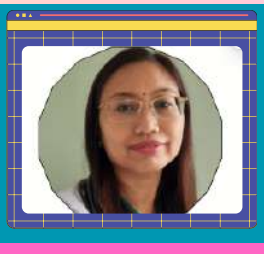

I. Injury Patterns in Pregnant Women Due to Partner Substance Abuse

Substance abuse among male partners is strongly associated with intimate partner violence (IPV)—a significant public health concern. It is estimated that one in four women experiences severe physical violence in their lifetime [1], and approximately 3% to 9% experience abuse during pregnancy [2]. Risk factors associated with IPV during pregnancy include young maternal age, unmarried status, minority racial or ethnic background, and socioeconomic disadvantage [3].

Violence often escalates during pregnancy due to **heightened stress, jealousy, and power imbalances. The injuries sustained can be broadly categorized into:**

1. Physical Trauma

- **Blunt Force Trauma**: Common sites include the face, head, abdomen, breasts, ribs, arms, and extremities. In pregnancy, abdominal trauma is particularly concerning and may result in placental abruption, uterine rupture, preterm labor, or fetal injury/death.
- **Strangulation Injuries**: Often underreported, these injuries are highly lethal. Clinical signs include bruising around the neck, petechiae, voice changes, and neurological symptoms. Strangulation may cause fetal hypoxia due to reduced maternal oxygenation.
- **Falls or Being Pushed**: Aggressive shoving or physical assault may lead to pelvic fractures, hip dislocations, spinal injuries, or miscarriage.

2. Psychological and Emotional Harm

Victims may experience:

- **Post-Traumatic Stress Disorder (PTSD)**
- **Depression and anxiety**
- **Sleep disturbances**
- **Avoidance of prenatal care** due to coercion, fear, or isolation

3. Reproductive and Obstetric Complications

Violence during pregnancy increases the risk of:

- **Preterm labor**
- **Low birth weight**
- **Fetal growth restriction**
- **Spontaneous abortion**
- **Unplanned pregnancy**
- **Sexually transmitted infections (STIs)** resulting from coercive or unprotected sex [4]

II.Police–Medical One-Stop Centres:

One-Stop Centres (OSCs) are integrated, multidisciplinary facilities designed to deliver comprehensive, coordinated, and survivor-centered services to victims of violence, including sexual assault, domestic abuse, and other forms of trauma. These centers are crucial in providing timely support in domestic, public, workplace, or institutional settings.

1)Key Functions of Police–Medical One-Stop Centres:

a)Medical Services

- Immediate management of physical injuries and trauma
- Sexual assault forensic examination (SAFE kit) by trained professionals
- Pregnancy testing and emergency contraception
- STI prophylaxis and HIV Post-Exposure Prophylaxis (PEP)
- Mental health screening and psychological first aid
- Accurate medico-legal documentation

b)Police Services

- Prompt and sensitive registration of First Information Reports (FIRs)
- Collection and preservation of evidence in coordination with medical staff
- Support in initiating legal proceedings
- Ensuring the safety, dignity, and confidentiality of survivors during interviews

c)Psychosocial and Counselling Services

- Trauma-informed counselling by psychologists or trained social workers
- Safety planning and emotional support

d)Legal Aid Services

- Information on legal rights and protection laws (e.g., POCSO, Domestic Violence Act, IPC Section 498A)
- Assistance with legal representation and navigation of the judicial process
-

e)Shelter and Rehabilitation Support

- Referral to safe shelters for survivors requiring immediate protection
- Access to vocational training, rehabilitation, and reintegration programs

2)Advantages of the One-Stop Centre Model:

- Minimizes re-traumatization by consolidating services at a single point
- Enables rapid response, crucial for both medical and legal outcomes
- Encourages a collaborative and survivor-focused approach

3)One-Stop Centres (OSC) in India:

Under the Ministry of Women and Child Development, the "Sakhi" One Stop Centres have been established to provide 24x7 emergency and non-emergency services for women affected by violence. Implementation milestones include:

- **Phase** 1: 36 centres (one per state/UT)
- **Phase 2**: Additional 150 centres
- Expansion: 50 additional centres added in 2017–18, 2018–19, and 2019–20 [5]

III. Post-Abuse Reproductive Health Protocols

Post-abuse reproductive health protocols are essential for addressing the immediate and long-term health consequences of violence. These protocols ensure comprehensive, trauma-informed, and confidential care, aimed at promoting recovery, empowerment, and dignity.

Checklist Summary for Post-Abuse Reproductive Health Care:

Step	Intervention
🩺 Initial Care	Consent, safety, exam
⚖️ Forensics	SAFE kit, documentation
💊 Emergency Contraception	Within 72–120 hrs
🤰 Pregnancy Testing	Counselling and options
🦠 STI Prophylaxis	Empirical treatment
🧬 HIV PEP	Within 72 hrs
🧪 Hepatitis B	Vaccine and HBIG
🧠 Mental Health	Support and referrals
📅 Follow-up	Scheduled reviews
🔐 Confidentiality	Secure records and informed care

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08

Divorce & Separation: Legal Battles, Custody Stress on Women

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Abstract

Divorce and separation, though legally defined events, are far-reaching psychosocial disruptions, especially for women in patriarchal societies. The burden of delayed court proceedings, financial vulnerability, and custody litigation often falls disproportionately on women. These stressors, particularly during pregnancy or early motherhood, adversely affect antenatal care adherence, maternal mental health, and long-term well-being. The present analysis examines these intersections in an Indian and global context, evaluates the efficacy of mediation and digital legal-aid innovations, and proposes integrative policy interventions.

Introduction

Globally, divorce and marital separation constitute more than a private relationship breakdown; they are multifactorial disruptions with significant psychosocial, economic, and healthcare implications. While the male experience of divorce is frequently analyzed through the lens of financial loss or emotional detachment, women especially those navigating custody and pregnancy encounter compounded stressors. These include delayed legal recourse, unstable finances, disrupted reproductive healthcare, and diminished social capital.

In societies with entrenched gender norms, such as India, this vulnerability is amplified. Women exiting marriages must often prove their moral worthiness, parental fitness, and financial competence while navigating procedural labyrinths. The discussion that follows focuses on the effects of court delays, custody-related stress, and financial insecurity on women's health, particularly antenatal adherence, and highlights the potential of mediation and digital legal platforms to mitigate these outcomes.

Judicial Delays and Legal Re-traumatization

Family courts globally are overburdened, and India is no exception. As of 2024, more than 4,00,000 matrimonial cases remain pending across Indian family courts. Legal delays affect all litigants but impose distinct consequences on women. The judicial process in India particularly for contested divorces, custody petitions, or maintenance claims can extend over several years, with intermittent hearings, adjournments, and adversarial proceedings.

A qualitative study by Salim (2021) observed that over 70% of divorced Muslim women in Kerala reported symptoms of clinical depression, anxiety, or insomnia exacerbated during litigation periods. Similar findings have emerged from international contexts. Sbarra (2015) documented that separation-related legal stress correlates with higher inflammatory biomarkers and impaired cardiovascular health among women.

Such delays often force women to remain in unsafe or financially exploitative circumstances. Legal re-traumatization is particularly pronounced for women who experienced domestic violence, as they are often required to recount events in detail, face cross-examination, or endure reconciliation pressures from the court or community actors.

Economic Insecurity Post-Separation

Financial vulnerability is among the most consistent consequences of separation for women across geographies. Unlike men, who may retain earning continuity and property control post-divorce, women especially homemakers or part-time workers face abrupt financial disruption. Despite provisions such as Section 125 of the Criminal Procedure Code and maintenance clauses under personal laws, the implementation is inconsistent.

Data from the National Family Health Survey-5 (NFHS-5) reveal that over 30% of female-headed households in India fall into the lowest wealth quintile, highlighting the association between marital dissolution and economic instability. Research by Rathi and Pachauri (2020) in western India documented that divorced women frequently engage in precarious employment, experience housing instability, and lack access to savings or health insurance.

Globally, similar patterns emerge. In the U.S., Bianchi et al. (2008) observed a 27% income drop in women post-divorce, compared to only 10% among men. In low- and middle-income countries, the absence of structured alimony enforcement mechanisms aggravates this divide.

This economic dependence also shapes custody decisions. Women must demonstrate financial self-sufficiency to retain custody, creating a paradox wherein the very system that disempowers them also demands their economic independence as proof of parental adequacy.

Custody Litigation and Maternal Stress

Custody disputes, particularly when adversarial, generate acute psychological stress. The requirement to establish fitness as a caregiver often through character assessments, psychiatric evaluations, or financial audits places an asymmetric burden on mothers. While Indian courts traditionally favor maternal custody for young children, shifting jurisprudence and strategic litigation by fathers have led to an increase in contested cases.

Nair (2022) found that in urban India, pregnant women engaged in custody battles demonstrated a 30% higher rate of antenatal care (ANC) dropouts. Missed appointments were linked to litigation stress, resource constraints, and fear of being perceived as psychologically unstable. Similar associations were noted in the U.K., where Wade et al. (2016) reported that pregnant women undergoing family law proceedings were less likely to adhere to scheduled obstetric evaluations and more likely to experience hypertensive disorders of pregnancy.

The physiological impact of stress on pregnancy is well-documented. Elevated cortisol levels contribute to adverse obstetric outcomes, including low birth weight, preterm delivery, and postnatal developmental delays. Thus, custody stress though situated within legal discourse has measurable effects on maternal and child health.

Reproductive Health and Legal Precarity

The reproductive timeline of most women intersects with the years in which marital instability is statistically more likely. Divorce during pregnancy or early motherhood introduces a triad of vulnerabilities: legal, financial, and physiological.

Antenatal care, already underutilized in low-resource settings, becomes even more inaccessible for women undergoing separation. In India, where ANC adherence is shaped by logistical access, social support, and financial agency, marital disruption significantly curtails healthcare uptake. Reports from ASHA workers across states highlight that women facing family disputes or legal battles are more likely to underreport symptoms, decline institutional deliveries, and disengage from follow-up care.

These disruptions extend to postpartum care as well. Separated or litigating mothers are at heightened risk for postpartum depression, particularly in the absence of partner or community support. The WHO (2022) estimates that over 15% of postpartum women globally experience mood disorders, with higher incidence among those facing legal and housing instability.

Mental Health Sequelae

The psychological consequences of divorce and custody litigation are not transient. In India, the NIMHANS (2020) report on women in legal distress noted a high prevalence of mood and anxiety disorders among separated women. Symptoms ranged from chronic fatigue and sleep disruption to somatic complaints and suicidal ideation.

In conservative societies, stigma surrounding divorce compounds this burden. Women often encounter social ostracization, diminished prospects for remarriage, and intrusive scrutiny into their private lives. These social pressures often preclude them from seeking professional mental health support, further entrenching distress.

Global literature corroborates these trends. Sbarra (2015) and Amato (2010) both emphasized that divorced women face elevated risk of long-term mental health decline when compared to their male counterparts, particularly in the absence of structured psychosocial support.

Mediation as a Constructive Intervention

To reduce adversarial litigation and its psychological fallout, mediation has emerged as a viable alternative. In India, family court mediation centres under the aegis of the Legal Services Authorities have reported over 60% success rates in settlement, particularly in maintenance and custody matters.

Unlike litigation, mediation allows for structured dialogue under professional facilitation, often resulting in more amicable and sustainable outcomes. Mahila Lok Adalats, women-centric counselling centres, and NGO-led dispute resolution forums further enable safe spaces for negotiation.

Nonetheless, mediation is context-sensitive. In situations involving domestic violence, unequal bargaining power, or economic coercion, mediation can inadvertently reinforce existing asymmetries. The presence of trauma-informed mediators, legal safeguards, and pre-screening for abuse histories is therefore essential to ensure just outcomes.

Digital Legal-Aid Ecosystems

Digital legal platforms are revolutionizing access to justice in India. Government initiatives such as Nyaya Bandhu, eCourts, and Tele-Law portals, along with independent platforms like Nyaaya.org, provide separated women with information on legal rights, downloadable templates for petitions, lawyer directories, and helplines.

These portals serve as critical lifelines for women in underserved or rural settings, where traditional legal aid services are inaccessible. Mobile-based legal support, including WhatsApp bots and voice-activated helplines, are increasingly being integrated into legal service delivery.

However, barriers remain. Limited digital literacy, language exclusion, and inconsistent internet connectivity hinder usage, especially among older or economically marginalized women. Hybrid models combining digital guidance with in-person legal aid clinics are increasingly being advocated as best practice.

Policy Recommendations

To alleviate the cumulative impact of marital separation on women, the following systemic interventions are recommended:

1.Time-Bound Family Law Adjudication: Establish fast-track family courts with clear timelines for custody and maintenance cases.

2.Legal-Medical Integration: Introduce legal aid clinics in primary health centres, especially maternal health units.

3. 1.Emergency Maintenance Funds: Implement direct benefit transfers for separated women to cover immediate healthcare, housing, and child-rearing costs.

4. 1.Gender-Sensitive Mediation Frameworks: Ensure presence of trauma-informed mediators and legal observers in all family dispute resolution settings.

5. Digital Legal Literacy Drives: Integrate legal literacy into community health worker curriculums and self-help group outreach programs.

Conclusion

Divorce and separation are not merely private or legal transitions; they are public health concerns with far-reaching implications for women's psychological, financial, and reproductive health. Court delays, economic disenfranchisement, and custody litigation collectively erode women's well-being, especially during vulnerable phases like pregnancy.

While legal reforms and support mechanisms such as mediation and digital legal aid offer substantial promise, their efficacy depends on accessibility, sensitivity, and systemic integration. Addressing the aftershocks of marital dissolution requires a coordinated approach involving judiciary, public health systems, and civil society.

Ensuring justice, dignity, and well-being for separated women is not only a measure of legal progress but a barometer of public health equity.

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09

Male Infertility: Hidden Burden on Wives' Bodies & Psyches

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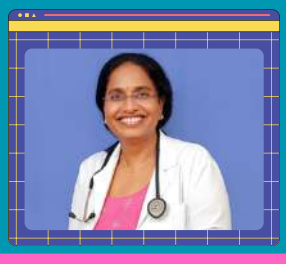

In 2009, the International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised their glossary of ART terminology, formally defining infertility as " disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse.

Reproduction's role in formation of families, communities influences social and cultural behavior, in spite of it being a biological function.[1]

Socially constructed gender ideologies influence the way men and women function around the world [1]. Women's primary identity is wife-hood and mother-hood in majority of situations and they are largely held responsible for reproduction. Breadwinning and protection of their families is men's primary identity [2].

Globally 1 in 6 couples face the problem of infertility with the male and female partners contributing to 1/3 of cause, and the rest in which both are responsible. Due to this gender assignment roles, in spite of advances in diagnosis and treatment modalities , infertility is considered a feminine problem.

In many patrirchial families after marriage, motherhood is considered a critical milestone in a woman's life. Women are who have at least one son to carry on the patriline preferably soon after marriage secures her position within the marital home and within society [3,4]. Women who bear sons canultimately, over time, ascend higher up the family hierarchy and acquire power in decision making [2]. When couples have infertility, it is considered a disaster with social consequences like physical, mental and emotional abuse by husbands, in laws, that have been well documented for women [5]. In some conservative families women who have not borne children are excluded from family events like weddings [6], religious ceremonies, touching babies[7], blessing pregnant women at baby showers. It is believed that children hold the family together [4] and childless women's position in unstable , being threatened with divorce

or having their husband establish another relationship, marry a second wife, and sometimes the extreme step of being ejected from their marital home[5], leading to depression and suicidal ideation. Changing life styles, obesity, smoking, alcohol consumption, use of recreational drugs, endocrine altering substances in nature, food , water, soil, air pollution, extreme weather conditions are factors leading to fall in sperms count across decades.

Even when there is a male factor : like poor sperms count, poor motility, ejaculatory disturbances, it is women who has to undergo aggressive fertility managements like ovarian stimulation, multiple transvaginal scans, multiple hormonal medications, injections, blood tests. The wait for the results of fertility treatments like intrauterine insemination or in vitro fertilization is one of the most stressful times in a couples life, with every person who knows about the fertility issue offering un solicited advice, some of which have no scientific basis. With success of medical procedures being limited, women have to undergo multiple cycles of treatment. The treatments are not without risks : such as weight gain, mood swings, and sometimes life threatened complications like hyperstimulation, multiple pregnancy, ectopic pregnancies, heterotropic pregnancy. Not all pregnancies end in live birth, some are miscarriages and sometimes poor obstetric outcomes in which the DNA from severe male factor might be the contributing factor, but the blame is on the women, what she ate, whether she took rest, whether her womb was not able to carry the pregnancy.

The great financial burden imposed by most fertility treatments can affect the marital relationship with increased mood changes, aggressiveness, isolationism, and depression for couples with the female partner being more vulnerable. [8]

The whole scenario becomes more complicated when third party reproduction in the form of sperm donation is necessary.

Some aspects of infertility can be prevented. Measures like having a balanced diet rich in whole grains, nuts, fruits and vegetables. Being on a regular exercise program, having adequate sleep, having stress coping mechanisms, quitting smoking, limited alcohol intake, avoiding recreations drugs, anabolic steroids. Avoiding STIs by not indulging in unprotected intercourse, or having multiple partners. Early detection and treatment of Male reproductive tract infections. Early diagnosis and seeking timely intervention go a long way in having good outcomes.

According to the United Nations, reproductive health is “a state of complete mental and social well-being and not merely the absence of infirmity, in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when andhow often to do so”. [9]

The couple should be therefore be treated as a unit. The health care system needs to adapt client friendly appropriate technologies which are accessible and socially appropriate for the couple to alleviate this suffering. There should be a change in society and more gender neutral society that does not stigmatize childless couples and more so burden women. Involving social media, NGOs in spreading this message should also be a the responsibility of bodies like FOGSI.

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10 Men's Sexual Health Erectile Dysfunction, Ejaculatory Disorders, and women's Intimacy

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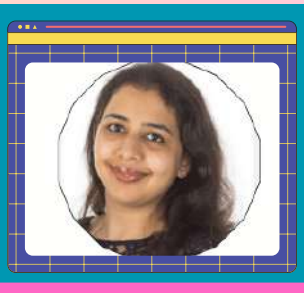

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Introduction

Sexual health is a vital aspect of overall well-being for both men and women. In men, erectile dysfunction (ED) and ejaculatory disorders are prevalent concerns, while women often face sexual dysfunctions that may be influenced by partner-related issues. Female Sexual Dysfunction (FSD) is a multifactorial condition affecting up to 40-50% of women globally, with psychosocial and interpersonal dynamics playing a central role. This paper explores male sexual health problems, female intimacy disturbances secondary to partner dysfunction, and compares device-based therapies versus pharmacologic interventions. Emphasis is placed on the importance of partner-inclusive rehabilitation models for holistic and sustainable sexual wellness.

Sexual dysfunction affects millions worldwide and can stem from physiological, psychological, and relational causes. While erectile dysfunction and ejaculatory disorders are common in men, women often report sexual dissatisfaction related to their partner's dysfunction or lack of intimacy. Addressing these issues in isolation can limit treatment efficacy. A combined approach—recognizing the interconnected nature of sexual health—can result in better clinical outcomes.[1]

- Men's Sexual Health: Erectile and Ejaculatory Disorders

Erectile Dysfunction (ED)

ED, defined as the consistent inability to achieve or maintain an erection sufficient for satisfactory sexual performance, affects up to 30 million men.

Common causes include:

• Cardiovascular disease
• Diabetes mellitus
• Hormonal imbalances
• Psychogenic factors
• Iatrogenic (e.g., post-prostatectomy)

Ejaculatory Disorders

These include:

• Premature ejaculation (PE): Occurs within one minute of penetration, often due to anxiety or neurobiological factors.

Delayed ejaculation (DE) or anejaculation: Often linked with medications, neurologic diseases, or psychological issues. Both conditions can lead to personal distress and relationship strain.

- Female Sexual Dysfunction Secondary to Partner Issues

Female sexual dysfunction (FSD) includes disorders of desire, arousal, orgasm, and pain. A significant but under-recognized contributor is the partner's sexual health. Studies show:

• A woman's sexual satisfaction is positively correlated with her partner's erectile

function and attentiveness.

Emotional intimacy is foundational to sexual satisfaction in women. A 2021 qualitative study revealed that women reporting low emotional connection with their partners were three times more likely to report sexual dissatisfaction [2]. Emotional neglect, chronic stress, and partner infidelity contribute to decreased libido and arousal.

-Partner Sexual Dysfunction

Male sexual problems like erectile dysfunction (ED), premature ejaculation, or lack of interest can directly affect the female partner's sexual experience. According to a 2023 study, 60% of women with FSD had partners with some form of sexual dysfunction [3].

-Communication Gaps and Mismatched Expectations

Sexual communication is often inadequate in relationships, leading to unmet needs and frustration. Cultural taboos and gender norms often prevent women from voicing desires or dissatisfaction.

Device-Based Therapies vs. Pharmacologic Treatments

Men's Therapies

Device-Based Options:
• Vacuum Erection Devices (VEDs): Effective for men unresponsive to PDE5 inhibitors.
• Penile prostheses: Recommended in refractory ED cases.
• Vibratory stimulators: Used in certain ejaculatory dysfunctions, especially in neurogenic conditions.

Pharmacological Options:
• PDE5 inhibitors (sildenafil, tadalafil): First-line for ED.
• SSRIs (e.g., dapoxetine): Commonly used for PE.
• Intracavernosal injections (alprostadil): For severe ED cases.

Women's Therapies

• Topical estrogen or DHEA:
Estrogen creams and testosterone gels are used for postmenopausal FSD, addressing dryness, thinning tissues, and libido loss. Topical DHEA also shows efficacy.

Pros:

Systemic effect on libido and mood
FDA-approved options available
Often effective in hormonally deficient women

Limitations:

Potential side effects (e.g., hypotension, nausea)

Contraindicated in some patients (e.g., liver disease, hormone-sensitive cancers)

Not effective in relationship-related FSD without emotional/psychological component

Partner-Inclusive Rehabilitation Models

Modern sex therapy recognizes that treating FSD in isolation from the partner may yield suboptimal results. Partner-inclusive rehabilitation involves both partners in the diagnosis, counseling, and therapeutic journey.

Flibanserin and bremelanotide:

Approved for hypoactive sexual desire disorder (HSDD) in premenopausal women, both drugs have demonstrated modest improvement in sexual desire and satisfaction. Flibanserin acts on serotonin and dopamine pathways, while Bremelanotide is a melanocortin receptor agonist [6].

Genital vacuum devices: Enhance blood flow and sensitivity.

Device-based approaches tend to be well-tolerated and free from systemic side effects, whereas pharmacologic treatments often require trial periods and close monitoring.

Device-Based Therapies

Device-based therapies are increasingly accepted for treating arousal and orgasmic disorders.

- **Low-Intensity Shockwave Therapy (LiSWT)**

Originally used in male erectile dysfunction, LiSWT shows promise in improving clitoral blood flow and genital sensitivity in women. A 2022 pilot study found significant improvement in arousal and lubrication after 8 sessions [4].

- **Vaginal Laser and Radiofrequency Therapy**

CO_2 and Er:YAG lasers are used to treat vaginal atrophy, dryness, and pain. A 2021 systematic review confirmed improvements in dyspareunia and vaginal lubrication in postmenopausal women [5].

- **Vibratory and Pelvic Floor Devices**

Pelvic floor toning devices and sexual vibrators improve muscle tone and genital sensation. These are particularly beneficial in women with orgasmic dysfunction and postpartum sexual issues.

Pros:

- Non-invasive
- Minimal systemic side effects
- Can be used at home

Limitations:

- Cost and accessibility
- Requires patient compliance
- Limited impact on relational or emotional aspects
- Pharmacologic Interventions
- Pharmacologic options target hormonal and neurotransmitter pathways.

Couple-Centered Sex Therapy

Based on cognitive-behavioral therapy (CBT) and sensate focus exercises, couple-based sessions help improve communication, emotional bonding, and sexual exploration. A 2020 randomized trial showed couple therapy had better long-term outcomes than individual therapy in treating FSD [7].

Partner Sexual Function Screening

Addressing the partner's sexual dysfunction simultaneously improves outcomes. Studies emphasize co-treatment of male ED and female FSD increases sexual frequency and satisfaction for both [8].

Psychoeducation and Sexual Mindfulness Training
Partners are educated about female sexual response, anatomy, and emotional triggers. Mindfulness-based interventions help couples cultivate intimacy and presence during sexual activity.

Technology-Assisted Models

Telehealth platforms offering partner-inclusive modules have shown high adherence rates and significant improvements in sexual satisfaction. These include app-based therapy assignments and video-guided sessions.

The Need for Inclusivity

Historically, sexual dysfunction treatments were siloed, focusing on the individual. Recent evidence supports a biopsychosocial model involving both partners in therapy.

Partner-Inclusive Approaches Include:
- Couples counselling and sex therapy
- Joint use of devices (e.g., vibrators, vacuum tools)
- Education about each other's anatomy, arousal responses, and concerns
- Psychosexual support following surgery, childbirth, or chronic illness

Benefits:
- Improved communication and empathy
- Reduced stigma and blame
- Enhanced sexual satisfaction for both partners

Such models are especially beneficial in cases like:
- ED post-prostatectomy
- FSD following childbirth or trauma
- Mismatched libido levels

Recommendations
Comprehensive Evaluation: Include partner interviews and relationship assessment in FSD workups.

Combination Therapy: Device or drug-based treatments should be combined with relational counseling when applicable.

Education: Normalize discussions around sexual health for both partners.

Policy and Access: Promote insurance coverage and telehealth access for sexual rehabilitation.

Conclusion

Addressing sexual health through a unified, partner-focused lens is essential for effective diagnosis, therapy, and patient satisfaction. While pharmacological and device-based treatments offer symptom relief, sustainable outcomes are achieved when psychological, emotional, and relational factors are also considered. The future of sexual medicine lies in multidisciplinary and partner-inclusive approaches that embrace both physical function and emotional intimacy.

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11 STIs & HPV in Men: Cervical Cancer Prevention Starts with Him

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Sexually transmitted diseases (STDs) are infections transmitted during sexual contact. STDs are often referred to as sexually transmitted infections (STIs). STDs can be transmitted during any type of sexual activity. Many STDs do not cause notable signs or symptoms, so a person can have one and not know it, and consequently, spread the infection to others.

Different types of STI in men

- Chlamydia
- Gonorrhea
- Trichomoniasis
- HIV
- Genital herpes
- Hepatitis B and C
- Syphilis
- Zika virus

Chlamydia

Chlamydia is a bacterial infection that is common in sexually active young adults. It is caused by the bacterium Chlamydia trachomatis. Many of those infected do not have any signs or symptoms.
When it does cause symptoms in men, symptoms of urethritis are the most common. It can also cause infection of the epididymis and orchitis. Chlamydia infection can be cured with antibiotics such as azithromycin. Reinfection can occur especially when sex partners of an infected person are not treated.

Gonorrhea

Gonorrhea is a bacterial infection that may not always cause signs and symptoms and can remain undiagnosed. Gonorrhea can cause urethritis in men, leading to burning or pain on urination and discharge from the urethra.

Gonorrhea one of the STDs in men is caused by Neisseria gonorrhoeae bacteria and when symptoms do occur they develop about 4-8 days after contracting the infection. Gonorrhea can also cause infection in the rectum and throat. Moreover gonorrhea causing symptoms like rash and joint pain. Antibiotics such as cefixime (Suprax) are typically used to treat

Trichomoniasis

Trichomoniasis is a sexually transmitted infection caused by the Trichomonas vaginalis parasite. Most men who are infected do not have symptoms. When the infection does cause symptoms it typically results in urethritis, with itching or burning and discharge from the urethra. Metronidazole and tinidazole are antibiotics commonly used in the treatment of trichomonas infection.

HIV

The human immunodeficiency virus (HIV) is perhaps the most feared STD. Infection with the HIV virus can occur during sexual contact, by sharing needles. The virus ultimately causes dysfunction of the body's immune system at a later time point. The average time from infection to immune suppression is 10 years. No specific symptoms signal HIV infection but some people develop fever and a flu-like illness, Diarrhoea, weight loss 2 to 4 weeks after they have contracted the virus.Once immune suppression is present serious complications like unusual infections certain cancers and dementia may develop. Numerous medications are available to help affected people manage the infection and delay or prevent the progression of the illness.

Genital herpes

The herpes simplex viruses (HSVs) cause painful blistering sores on sexually exposed areas of the body. They can be transmitted during any type of sexual contact. Typically, HSV type 1 (HSV-1) causes cold sores around the mouth. While HSV type 2 (HSV-2) causes genital herpes but both types of HSV are capable of infecting the genital area.

Like some other STDs in men, it is possible to become infected with HSV and have very mild symptoms or none at all. The lesions caused by HSV typically take the form of painful blisters that eventually open forming ulcers and then crust over. In men the sores can be found on the penis, scrotum, buttocks, anus, inside the urethra or on the skin of the thighs.

Hepatitis B and C

Hepatitis is inflammation of the liver. Hepatitis B and hepatitis C are two viral diseases that can be transmitted by sexual contact. Both the hepatitis B virus (HBV) and hepatitis C virus (HCV) are transmitted by contact with the blood of an infected individual or by sexual activity, similar to HIV.

HBV may not cause symptoms, but it causes symptoms of acute hepatitis in about 50% of infections. The primary danger with HBV infection is that around 5% of those infected progress to have long-term liver damage or chronic hepatitis B and Hepatoma. People with chronic hepatitis B are at increased risk for the development of liver cancer.

There is a very effective vaccine available for the prevention of hepatitis B. Treatment of acute hepatitis involves supportive care and rest although those with chronic hepatitis may be treated with interferon or antiviral medications.

HCV is rarely transmitted by sexual contact and is usually spread by contact with the blood of an infected person. It is possible to transmit this virus as a result of sexual contact. Most people infected with HCV have no symptoms. so a delayed or missed diagnosis is common. In contrast to hepatitis B, most people with HCV infection (75%-85% of people infected) develop chronic infection with the possibility of liver damage. There is also no vaccine available against HCV.

Syphilis

Syphilis is a bacterial infection caused by Treponema pallidum bacteria. If not treated the disease progresses through three phases and can also persist in a latent state. The initial manifestation is a painless ulcer, known as a chancre at the site of sexual contact. The chancre develops 10-90 days after infection and resolves after 6 weeks. Syphilis can be treated with antibiotics.

This first stage is untreated secondary syphilis can develop.

In secondary syphilis there is spread of the disease to other organs causing various symptoms that can include skin rash, swollen lymph nodes, arthritis, kidney disease, or liver problems. Tertiary syphilis can cause different conditions including brain infection the development of nodules known as gummas, aortic aneurysm, loss of sight and deafness. Fortunately syphilis is curable with proper antibiotic treatment.

Zika virus

Transmission of Zika virus occurs among humans by the bite of an infected vector mosquito. However sexual transmission of the Zika virus is also possible and an infected individual may spread the virus to his or her sex partners.

How do men get STDs?

STDs in men can be caused by different kinds of microorganisms, including viruses, bacteria, and parasites. STDs in men caused by viral infections include human papillomavirus (HPV), human immunodeficiency virus (HIV), herpes simplex virus (HSV), hepatitis B and C, and human herpesvirus-8 (HHV-8).

STDs in men caused by bacterial infections include syphilis, gonorrhea, and chlamydia.

Trichomonas is an example of a sexually transmitted infection caused by a parasite. Infestations with parasitic bugs such as lice or scabies can also be transmitted by close contact and may be acquired during sexual activity. Humans contract the Zika virus through the bite of an infected vector mosquito and the Zika virus can be transmitted to others through sexual contact.

Who is at risk for contracting an STD?

Anyone who engages in any kind of sexual activity is at risk for STDs.

Prevention

The only way to eliminate the risk of acquiring an STD is abstinence from sexual activity. The use of latex condoms during sexual contact can greatly reduce the chances of contracting many STDs in men but no method is completely safe.

Demography

There is 20 million new STD infections occur each year. People ages 15-24years account for about half of those newly infected. Young men and young women are about equally affected. Sexually active gay, bisexual, and other men who have sex with men (MSM) are at greater risk of acquiring STDs. In addition to an increased risk of syphilis over 50% of all new HIV infections occur in MSM.

What are warning signs of STDs in men?

STDs in men can be grouped into three categories:
STDs that predominantly cause genital lesions (sores or abnormalities on the genital organs)
STDs that predominantly cause inflammation of the urethra (urethritis)
STDs that cause symptoms and signs throughout the body (systemic STDs)

Some of the STDs in men that cause local lesions or urethritis including gonorrhea and syphilis can also cause damage to other organs and spread within the body if not treated.

Depending upon the exact infection, STDs that cause genital lesions may cause:
Genital warts
Painful blisters
Ulcers

STDs in men that cause urethritis cause early signs and symptoms often associated with a urinary tract infection.
Painful or burning sensation during urination
Discharge from the urethra

What tests diagnose STDs in men?

Many STDs are diagnosed based on clinical history and characteristic physical findings. Herpes and syphilis are two conditions that can produce identifiable signs and symptoms. Often the diagnosis of an infection depends upon the identification of the organism. Several different tests are available for STDs in men that are based either on the detection of the surface proteins of the organism or on the genetic material of the organism. These methods are more commonly used than the culture to identify STDs in men.

What is the treatment for STDs in men?
The treatment for STDs in men depends on the type of infection, which may include:

STDs caused by bacteria - Chlamydia, gonorrhea, and syphilis - are typically curable with antibiotics. Trichomoniasis can be cured with effective medications that eliminate the parasite. Viral STDs in men may resolve on their own. such as genital warts (HPV) infection. There is no treatment for HPV infection, although it commonly does not cause problems. Genital warts can be treated by destruction and removal.

The hepatitis B virus (HBV) and to a greater extent the hepatitis C virus (HCV) infections may persist and develop into a chronic infection. Antiviral drugs and interferon may be used to manage these long-term infections but they do not cure the infection.

HIV treatment drugs can manage the infection but they do not cure it. The herpes simplex virus (HSV) infection persists for life although antiviral drugs can help reduce the severity and frequency of outbreaks.

Can STDs in men be cured?
STDs in men caused by bacteria are typically curable with antibiotics while some STDs, like herpes and HIV infection, are not curable and persist for life.

Can you die from an STD?
Yes, STDs in men can lead to death if left untreated.
When untreated, some treatable STDs can spread throughout the body causing serious consequences. Gonorrhea and syphilis are examples of treatable conditions that can cause serious consequences if not treated.

HIV infection causes immune suppression that can lead to death from cancers or rare infections although treatments are available to postpone or delay the immunosuppressive actions of the virus. Both hepatitis B and C can cause liver damage. They may cause liver damage that sometimes progresses to liver failure. Herpes (HSV) infection persists throughout life with the possibility of future outbreaks of the illness however there is no cure.

How can you prevent getting an STD?
1.Using condoms can help prevent the transmission of many STDs in men but no method of prevention is 100% safe.
Prevention can also be difficult because many people will not show specific signs or symptoms of an STD even though they may be infected.

2. Abstinence from sexual activity is the only absolute way to prevent STDs in men
3. Limiting the number of sexual partners can help reduce the risk of exposure to infections.
4.Early diagnosis and recognition of infections as well as counselling about STDs and risk can help avoid the further spread of infections.
5.Many barrier methods of birth control are available for a man example the sponge, male condoms, spermicides, contraceptive sponge.
6.Circumcision a surgical procedure to decrease the incidence of STI

What Tests Are Done for STDs?
Testing for sexually transmitted diseases (STDs) includes blood tests, urine samples, and vaginal, oral or rectal swabs.
How Effective Are Condoms?
Typical use: 82% effective

Pros
STD prevention
Extremely easy to purchase
Inexpensive some are even free. The average condom costs about $1.
Very easy to use
Male condoms can provide increased sensation for both partners. Try experimenting with different styles, shapes, flavors, and textures of male condoms.
Can be used for oral, anal, and vaginal sex.
Can be used with other birth control methods

Cons
One-time use
Required every time you have sex
Must be used properly in order for effectiveness
Not as effective as other birth control methods.

Genital warts (HPV)
Human papillomavirus infection (HPV) is a very common STD in men.
Different types of HPV exist and cause different conditions. Some HPVs cause common warts that are not STDs and other types are spread during sexual activity and cause genital warts. Most people with HPV infection do not develop genital warts or cancers and the body is often able to clear the infection on its own.
It is currently believed that over 75% of sexually active people have been infected at some point in life. When HPV causes genital warts in men the lesions appear as soft, fleshy, raised bumps on the penis or anal area. There may be larger and take on a cauliflower-like appearance. There is no cure for HPV infection. It often resolves on its own. Treatments to destroy or remove genital warts are also available. Vaccines are available for boys that confer

immunity to the most common HPV types. HPV infection in men can cause health problems too. It's important for men to reduce the risks of HPV infection.

HPV infection can increase a man's risk of getting genital cancers although these cancers are not common. Some of the types of HPV associated with genital cancers can lead to cancer of the anus or penis in men. Both of these cancer types are rare especially in men with a healthy immune system.

The American Cancer Society (ACS) estimates that in 2022, about 2,070 men in the U.S. will be diagnosed with cancer of the penis and 3,150 men will be diagnosed with anal cancer.The risk of anal cancer is about 17 times higher in sexually active gay and bisexual men.

Men who have HIV are also at higher risk of getting this cancer. Most cancers that are found in the back of the throat including at the base of the tongue and in the tonsils are HPV related.

HPV Vaccine for Men?
In the U.S. Gardasil 9 is available to prevent HPV infection and anal cancer. It can be given to men as young as age 9 through age 45.

HPV vaccine
The HPV vaccine is most effective if get it before sexually active which is why it’s recommended that people of all genders get it by age 11 or 12 to at least by age 26.
Anyone between the ages of 9 and 45 can get the HPV vaccine.

There are three HPV vaccines including:
Cervarix
Gardasil
Gardasil-9 (the only vaccine currently used in the U.S.)
The vaccines target high-risk types of HPV

All three guard against HPV 16 and 18. Gardasil and Gardasil-9 are also effective against HPV 6 and 11, which cause most genital warts. Gardasil-9 also targets high-risk strains 31, 33, 45, 52, and 58.

The widely tested vaccine is over 99% effective given 2doses 6 to 12 months apart. According to the CDC these can be given starting at age 9 are optimal at ages 11 to 12 and are recommended for everyone not previously vaccinated up to age 26. Vaccination is not automatically recommended between 27 and 45 years old. Beyond age 45 vaccinations are not recommended as most adults of this age have already been exposed to infection

Complications

Sexually transmitted infections that remain untreated result in systemic infections leading to prolonged medical recovery as well as psychological, financial, and general health deterioration.

Prognosis

The prognosis depends on the diagnosis of the specific disease, its extent and severity at the time of initial presentation, the general health and comorbidities of the patient and their willingness to comply with necessary treatment, follow-up and preventive measures. If the disease process is found in the acute phase and can be treated effectively with antimicrobials, the outcome depends on the treatment course and patient compliance. Medication adherence plays a primary role in treating and managing STIs. Worldwide, health services for diagnosing and treating STIs are frequently underfunded often neglected and generally inadequate.

Problems include the cultural stigmatization of patients with STIs, inadequate education of healthcare workers in some areas, limited resources, and the frequent need for patients to bear a significant financial burden for their own treatment which many cannot afford.

Populations at the highest risk (workers in the sex trade, prostitutes, illegal drug users, prisoners, and young people in countries with high rates of STIs and HIV) often lack access to proper, affordable healthcare and STI treatment services. In many parts of the world STI services are not seen as significant or important, so they are underfunded and neglected. This only leads to higher numbers of infected but untreated patients, poorer training of healthcare workers, reduced laboratory testing ability, and inadequate supplies of appropriate medications.

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12 NCD s in MIDLIFE MEN : CARDIOVASCULAR, DIABETES,CANCER and SPOUSAL CARE GIVING

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Vijaywada AP

Spousal Caregivers play a significant role in the life of Midlife Men with Non Communicable Diseases like cardiovascular, Diabetes,Cancer etc. They support symptom management, self-care, and decision-making, particularly in regard to the transition from the hospital to home. A lack of caregiver's support has been associated with increased rehospitalizations and mortality. While caregiver support by spouse has been shown to improve a patient's health, assuming the role may cause a burden on the Caregiver Spouse.

Caregiver burden is defined as "The extent to which caregivers perceive that caregiving has had an adverse effect on their emotional, social, financial, physical, and spiritual functioning." The impact is multidimensional caused by an imbalance between the mens demand and the ability of the spouse to cope with demands. For instance, caregivers spouses burdens consist of economic, physical, psychological, and lifestyle issues such as insomnia and fatigue, depressive symptoms and anxiety, limited social life, and changed roles.

Economic effects : The first effect is financial strain. Family caregiving has high outof-pocket costs and financial strain and its cascading effects add complexity to an already difficult situation. One in five caregivers report high financial strain. Financial impacts as a result of caregiving are taking on debt, unpaid or late bills, or having to borrow money from family or friends and diminished ability to save. As a result of caregiving, nearly 30% of family caregivers stopped saving, and more than 20% used up their personal shortterm savings. An additional 12% used up their long-term savings.The final economic effect is on caregivers' long-term financial security. Specific threats to long-term financial security include stopping saving, taking on more debt, long-term caregiving, and a lack of planning for the future.

Impact on productivity of the Spouse: Caregiver responsibility to Midlife Men with NCDs has significant impact on Employee productivity if the Spouse is a working Woman.It reduces productivity by 1/3 on average. PRESENTEEISM occurs when employees are present but not performing their best due to Caregiving stress.

Another result of Caregiver burden on Spouse is Caregiver Burnout. Caring for a loved one also involves many stressors. And since caregiving is often a long-term challenge, the emotional impact can snowball over time.

The Woman may face years or even decades of caregiving responsibilities. It can be particularly disheartening if there's no hope that her Husband will get better, or if, despite her best efforts, the Mans condition is gradually deteriorating. If the stress of caregiving is left unchecked, it can take a toll on the Spouses health, relationships, and state of mind—eventually leading to burnout, a state of emotional, mental, and physical exhaustion. And when the caregiver spouse get to that point, both the woman and her husband suffer. That's why taking care of herself is a necessity for the caregiving spouse. Generally, stress can feel overwhelming, but burnout feels more like chronic exhaustion. Learning to recognize the signs of caregiver stress and burnout is important, so that immediate action to prevent things from becoming worse and start improving the situation for both the woman and her husband can be undertaken.

Common signs and symptoms of caregiver stress :
Anxiety, depression, irritability. Feeling tired and run down. Difficulty sleeping. Overreacting to minor nuisances. New or worsening health problems. Trouble concentrating. Feeling increasingly resentful. Drinking, smoking, or eating more. Neglecting responsibilities. Cutting back on leisure activities.

Common signs and symptoms of caregiver burnout
The woman has much less energy than she once had. She is constantly exhausted, even after sleeping or taking a break. The spouse neglect her own needs, either because she is too busy or she doesn't care anymore. Her life revolves around caregiving, but it gives her little satisfaction. She has trouble relaxing, even when help is available. She is increasingly impatient and irritable with her spouse she is caring for. She feels helpless and hopeless and worries about how to cope. Caring for a loved one will never be stress-free.

The Caregiver Strain Index : It is a screening instrument which can be used to identify strain of carers, assess their ability to go on caring and to identify areas where support may be needed. Strain was defined as 'those enduring problems that have the potential for arousing threat' 13 questions are provided, with answers being Yes or No.

The instrument can be either answered by the carer or with staff asking questions in an interview situation. Time frame for administration is approximately 5 minutes.

Scoring details: The score is determined by adding up the "Yes" answers. A score of 7 or greater indicates a high level of stress. If score is 7 or greater – discuss, develop and prioritise support strategies with Carer.

1.Sleep is disturbed because husband is in and out of bed or wanders around at night
2. It is inconvenient because (e.g. helping takes so much time or its long drive over to help.)

3. It is a physical strain(e.g. because helping in and out of a chair, effort or concentration required) 4. It is confining (e.g. helping restricts free time or cannot go visiting) 5. There have been family adjustments (e.g. because helping has disrupted routine, there has been no privacy)
6. There have been changes in personal plans (e.g. had to turn down a job; could not go on vacation)
7. There have been other demands on my time (e.g. from other family members)
8. There have been other emotional adjustments (e.g. because of severe arguments)
9. Some behaviour is upsetting (e.g. because of incontinence;has trouble remembering things or accuses people of taking things)
10. It is upsetting to find the spouse has changed so much from his/her formal self (e.g. he/she is a different person than he/she used to be)
11. There have been work adjustments (e.g. having to take time off)
12. It is a financial strain
13. Feeing completely overwhelmed (e.g. because of worry about spouses health and concerns about how you will manage.)
TOTAL SCORE COUNT "Yes Responses" A score of 7 or more would indicate a greater level of stress.

The National Programme for Prevention and Control of Non Communicable Diseases (NP-NCD) erstwhile National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) was launched in 2010 in 100 districts across 21 states with an objective to prevent and control major NCDs and also help Care givers overcome the various problems.

The National Health Policy 2017 envisions the need for development for strategies and institutional mechanism in each of the priority area to create "Swasthya Nagrik Abhiyan" a social movement for health. The policy focuses on collaborating with Non-Government Sector and engagement with private sector for specialized services. The policy advocates a positive and proactive engagement with the private sector for filling critical gap toward achieving national goals. Key Objectives: To achieve the above goal, key communication objectives are: • Increasing awareness among the population to help identify risk factors, maintain healthy behaviours and practices, address misconceptions and fears. • Behavioural change communication (BCC) for promotion of healthy life. • Generating demand of NCD services at different levels. • Self-care management and treatment adherence.

Ayushman Arogya Mandir

Ayushman Arogya Mandir is an attempt to move from a selective approach to health care to deliver comprehensive range of services spanning preventive, promotive, curative, rehabilitative and palliative care. It has two components which are complementary to each other. Under its first component, 1,50,000 Ayushman Arogya Mandir will be created to deliver Comprehensive Primary Health Care, that is universal and free to users, with a focus on wellness and the delivery of an expanded range of services closer to the community. The second component is the Pradhan Mantri Jan Arogya Yojana (PM-JAY) which provides health insurance cover

of Rs. 5 lakhs per year to over 10 crore poor and vulnerable families for seeking secondary and tertiary care.

Ayushman Bharat, also known as Pradhan Mantri Jan Arogya Yojana (PM-JAY), is a healthcare scheme that provides financial protection to vulnerable families against high healthcare costs. While there isn't specific information on "Aayushman Bharat Palliative Home Care Kits," the scheme does cover palliative care services under its benefits.

Key Features of Ayushman Bharat's Palliative Care:

- **Coverage**: Ayushman Bharat covers elderly and palliative health care services, which may include home-based care, under its Health and Wellness Centres (HWCs) and PM-JAY benefits.
- **Home Care**: The scheme emphasizes providing comprehensive primary healthcare, including palliative care, closer to communities through HWCs.
- **Services**: Palliative care services may include pain management, symptom control, and emotional support for patients with life-limiting illnesses [1] [2].

Home Care Kit Details:

A Training Manual on Palliative Care for ASHA at Ayushman Bharat – Health and Wellness Centres mentions a home care kit as part of palliative care support.

Ayushman Arogya Mandirs are envisaged to deliver expanded range services that go beyond Maternal and child health care services to include care for non -communicable diseases, palliative and rehabilitative care, Oral, Eye and ENT care, mental health and first level care for emergencies and trauma , including free essential drugs and diagnostic services.

e-Sanjeevani: National Teleconsultation Service of Ministry of Health and Family Welfare i.e., eSanjeevani is first of its kind online OPD service offered by the government to its citizens. National Teleconsultation Service aims to provide healthcare services to patients in their homes. eSanjeevani has two variants

i)e -Sanjeevani Ayushman Bharat-Health and Wellness Centre (AB-HWC): A Doctor-to-Doctor telemedicine service under Ayushman Bharat-Health and Wellness Centres scheme of the Government of India, to provide general and specialised health services in rural areas and isolated communities. Doctor-to-Doctor telemedicine service is based on a Hub-and-Spoke model. ‘eSanjeevani AB-HWC’ enables virtual connection between the beneficiary (along with the paramedic and a generalist) at the spoke i.e. HWC and the doctor/ specialist at the hub (tertiary healthcare facility/hospital/medical college). This facilitates real-time virtual consultation from doctors and specialists at the hub with the beneficiary (through paramedics) at the spoke. The e-prescription generated at end of the session is used for obtaining medicines. ‘eSanjeevani AB-HWC’ was implemented with a vision to provide quality health services to maximum number of citizens by leveraging potential of Information Technology bypassing hindrances of geography, accessibility, cost and distance.

i)ii) eSanjeevani OPD: This is a patient-to-doctor telemedicine service to enable people to get outpatient services in the confines of their homes. 'eSanjeevani OPD' has also been speedily and widely adopted by citizens in all parts of the country. It is available as a mobile app for both Android and iOS based smart phones.

Both variants of eSanjeevani was utilised for NCD related services by beneficiaries and further it can be expanded to the whole of the country.

National Programme for Palliative care (NPPC)

Palliative care is also known as supportive care which is required in the terminal cases of Cancer, AIDS etc. and can be provided relatively simply and inexpensively. Effective palliative care requires a broad multidisciplinary approach that includes the family and makes use of available community resources. It can be provided in tertiary care facilities, in community health centres and even in patients' homes. It improves the quality of life of patients and families who face life-threatening illness, by providing pain and symptom relief, spiritual and psychosocial support from diagnosis to the end of life and bereavement.

The Ministry of Health & Family Welfare, Government of India constituted an expert group on Palliative care which submitted its report 'Proposal of Strategies for Palliative Care in India' in November, 2012. On the basis of the Report, an EPC note for 12th Five Year Plan was formulated. Palliative Care is part of the 'Mission Flexipool' under National Health Mission [NHM].

In summary being a caregiver for a spouse with NCD s can be challenging and emotionally draining for a Woman. Such Women must consider :

1.Seeking support from family, friends or support groups.
2.Respite care services
3.Counseling or therapy
4.Self care activities
5.Local resources and organisations for caregivers.

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13 Occupational Hazards: Pesticides, Heavy Metals & Wife's Reproductive Losses

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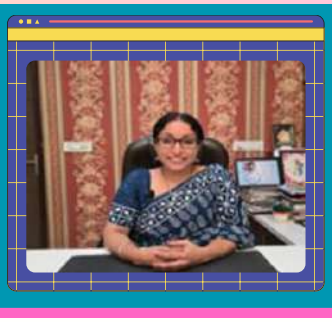

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INTRODUCTION

Occupational hazards refer to risks of illness that can occur in the workplace. Occupational exposure to hazardous chemicals such as pesticides and heavy metals poses significant risks to male reproductive health. Workers in agrarian and industrial settings are particularly vulnerable due to prolonged contact with these toxins. It increases the risks of infertility, miscarriages in their partners (reproductive losses), and congenital abnormalities in offspring.

HISTORY

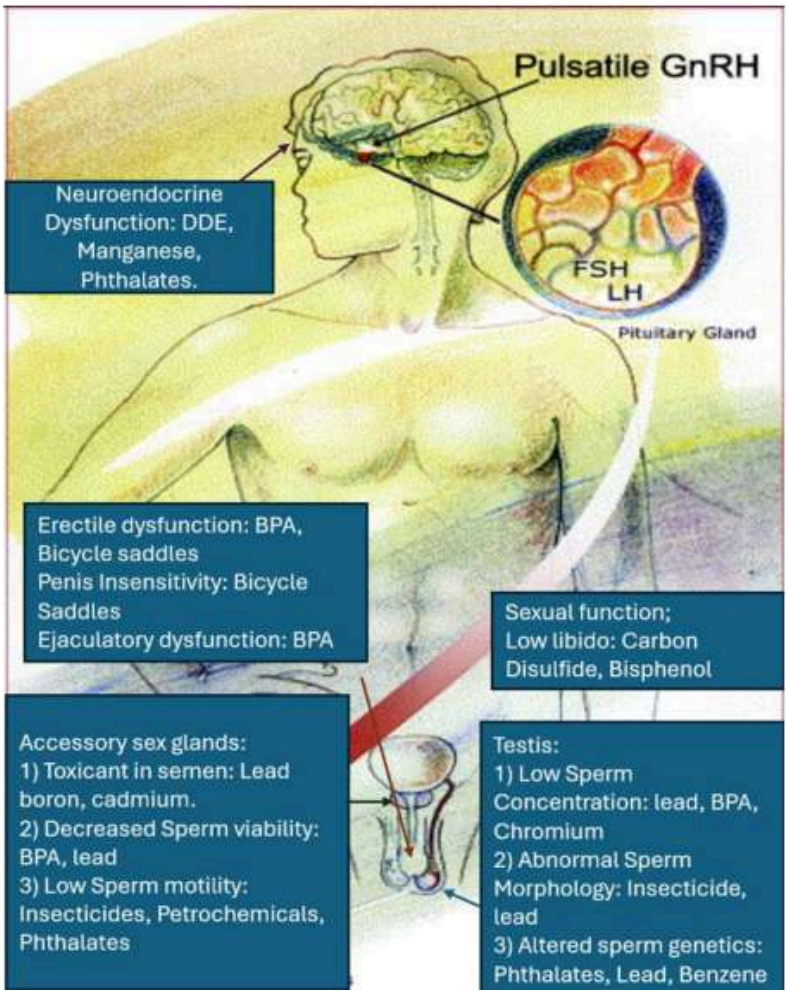
The investigation of occupational hazards and their impact on male fertility is a well-established field, with research dating back several decades. Initial findings emerged in the late 1970s, with a pioneering 1975 study linking lead exposure to potential reproductive dysfunction in male workers. Shortly after, in 1977, further evidence highlighted severe infertility among pesticide workers exposed to dibromo chloropropane (DBCP), revealing a strong association with drastically lowered sperm counts.[1]

IMPACT OF OCCUPATIONAL HAZARDS

India, ranking among the world's most polluted countries, is experiencing an unprecedented decline in fertility rates. For the first time, the Total Fertility Rate (TFR) has fallen below the replacement level of 2.1 the threshold required to sustain population stability across generations, as reported in the National Family Health Survey (NFHS) 2019-21. The national TFR now stands at 2.0, with significant disparities between rural (2.1) and urban (1.6) populations. Notably, Karnataka, a highly industrialized state, has recorded an alarmingly low TFR of 1.7, reflecting potential linkages between industrial pollution, environmental toxins, and reproductive health deterioration. Studies have demonstrated that occupational and environmental exposures significantly impair male fertility, particularly due to heavy metals such as zinc, cadmium, and lead. SEM analysis of sperm morphology revealed a high prevalence of abnormalities among individuals with elevated exposure to these metals. The study further identified that occupational settings involving prolonged exposure to high temperatures, hazardous chemicals, and airborne pollutants were strongly associated with diminished sperm quality. [3]

OCCUPATIONAL HAZARDS DUE TO PESTICIDES & HEAVY METALS: PATHOPHYSIOLOGY

Occupational hazards significantly impact male reproductive function through various pathophysiological mechanisms, primarily affecting sperm quality, hormonal balance, and testicular integrity.



These effects arise from exposure to physical agents (e.g., heat, radiation) and chemical toxins (e.g., pesticides, heavy metals), commonly encountered in workplaces.

Chemical Exposures:

a) Pesticides and industrial chemicals:

Dibromo chloropropane [DBCP]: Causes seminiferous tubule atrophy, drastically reducing sperm count and motility. Men exposed to DBCP showed medium sperm count dropping from 79 million/ml to 46 million/ml.[5] 2,4-Dichlorophenoxyacetic acid increases abnormal sperm morphology (Teratozoospermia and reduce motility.)

b) Heavy Metals:

Lead: Exposure reduces sperm concentration and causes chromatin denaturation at blood levels above 45 µg/dL. It also alters hormone levels (e.g., LH, FSH).[6]

Mercury: It accumulates in testicular tissues, leading to asthenozoospermia and reduced fertility. [7]

Chromium: Exposure correlates with abnormal sperm morphology and hormonal imbalances. [8]

Physical Exposures

Heat: Prolonged exposure (e.g. in ceramic workers) elevates testicular temperature, impairing sperm production and mobility.

Radiation: Imaging radiation damages germ cells, leading to oligospermia or azoospermia. Nonionizing radiation (e.g. Military radar) is also linked to reduced fertility.[9]

Vibration: Chronic exposure to machinery operators induces testicular oxidative stress and reduces blood flow leading to decreased semen quality. [10]

Mechanisms of damage:

Oxidative stress:

Metals like mercury and chromium generate reactive oxidative species, damaging sperm DNA and membrane. [11]

Hormonal disruption: Chemicals such as DBCP and lead interfere with Leydig cells and alter testosterone and LH levels. [12]

Direct Testicular toxicity:

Solvents like ethylene glycol directly damage Sertoli and germ cells, impairing spermatogenesis.

Epigenetic effects

Some chemicals alter DNA methylation patterns in sperm, potentially transmitting infertility risk to offspring.

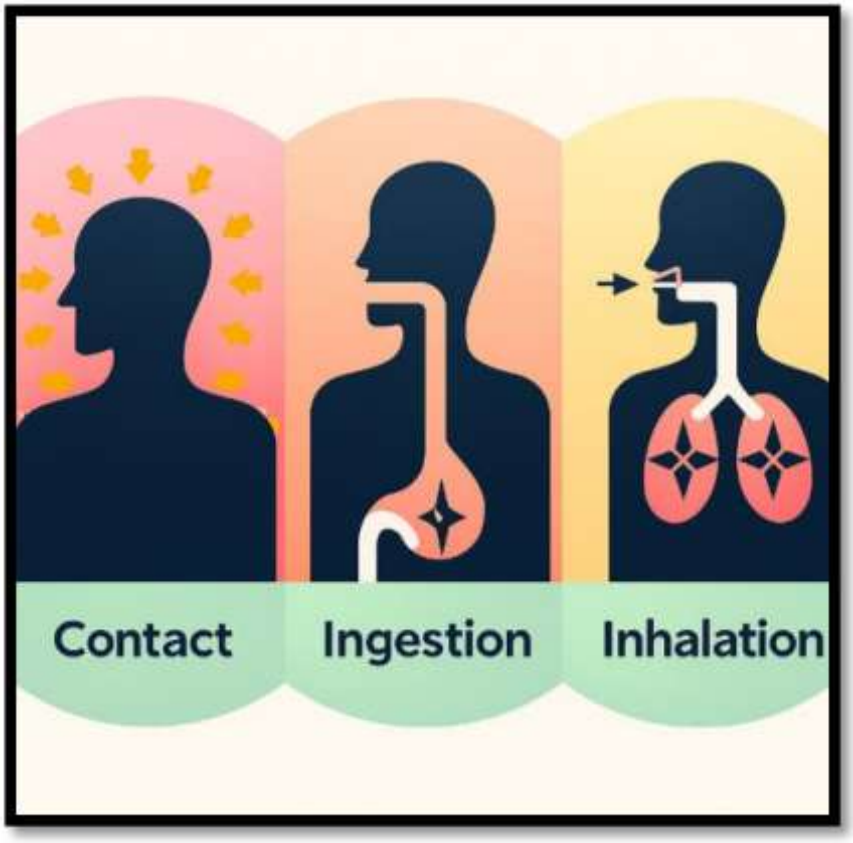
Secondary exposure risks:

A wife can be exposed to occupational hazards through her husband if he works in hazardous conditions and brings contaminants home, a process known as "Take Home" or “Secondary Exposure”. This occurs when toxic substances adhere to the worker’s skin, hair, clothing, shoes or personal items at the workplace. When husbands return home, these substances can transfer to household surfaces, furniture, laundry, vehicles or directly to family members through physical contact. Repeated exposure can significantly impact female reproduction through direct exposure to toxic substances, physical stressors and indirect pathways such as secondary contamination from partners. These exposures may lead to menstrual irregularities, reduced fertility, pregnancy complications and congenital anomalies in offspring. [13]

MODES OF EXPOSURE

1. Agrarian Exposure Map[3]

Key exposure pathways include:



• **Dermal Absorption**: Handling pesticides without gloves or protective clothing.
• **Inhalation**: Spraying pesticides without masks/respirators.
• **Ingestion**: Contaminated food/water due to poor hygiene practices.

2. Industrial Exposure Map

Key exposure routes:

• **Inhalation**: Metal fumes in welding/smelting.
• **Absorption**: Handling lead-based paints/cadmium batteries.
• **Oral Ingestion**: Contaminated dust in mining.
• **Injection**: Injuries from broken glass, metal shards, or sharp tools contaminated with hazardous chemicals.

CAUSES OF OCCUPATIONAL HAZARDS:

PPE gaps, workplace safety failures and lack of employee awareness constitute major causes of occupational hazards. Despite regulations, PPE compliance remains low due to:

• **Cost Barriers:** Small-scale farmers cannot afford respirators/gloves.
• **Lack of Training:** Workers reuse contaminated PPE.
• **Heat Stress:** Agricultural workers avoid full-body suits in hot climates.
• **Informal Sector Neglect**: No enforcement in unregulated industries.

PREVENTION & MANAGEMENT

Policy advocacy, regulatory improvements& employee awareness are the gold standard methods in the prevention and management of occupational hazards.

1. Strengthening Occupational Safety Laws

• **Enforce ILO C184 (Safety in Agriculture):** Mandate PPE provision.
• **Ban Highly Toxic Pesticides:** Phase out WHO Class Ia/Ib compounds.
• **Heavy Metal Exposure Limits:** Adopt EU REACH standards in developing nations.

2. Workplace Interventions

• **Regular Biomarker Testing:** Blood/urine tests for lead, pesticide metabolites.
• **Substitution with Safer Alternatives:** Promote biopesticides, lead-free solders.
• **Worker Cooperatives:** Collective bargaining for safer conditions.

3. Reproductive Toxicity Counselling Medical practitioners should:

• **Screen High-Risk Workers**: Assess exposure history.
• **Preconception Counselling**: Advise detoxification before planning pregnancy.
• **Partner Risk Communication**: Educate on miscarriage prevention.

4. **Implement Engineering controls**: e.g. ventilation, machine guarding.
5. **Regularly train employees**: on safe work practices and emergency procedures.
6. **Actively involve workers** in hazard identification and prevention planning.
7. **Continuously monitor, review, and improve hazard control measures.**
8. **Encourage reporting and open communi**cation
9. **Foster a safety culture** where all workers feel empowered to prioritize health and safety.

CONCLUSION

As husband and wife act like the two sides of a coin as far as reproduction is concerned , occupational hazards in one may negatively impact the other. As more men are exposed to toxins and adverse environmental conditions, it can directly or indirectly affect the reproductive potential of their partners. We need to create awareness in sectors involving occupational hazards and implement protective measures so that the reproductive health of the couple can be safeguarded.

To mitigate the impact of occupational hazards, policy reforms must strengthen occupational safety standards by mandating fertility risk assessments in high-exposure industries and enforcing PPE designed for reproductive protection, such as heat-shielding gear and chemicalresistant equipment. Additionally, integrating reproductive toxicity counselling into community health center (CHC) services can raise awareness. By establishing dedicated counselling services at CHCs, we can provide at-risk individuals and couples with critical education on exposure prevention, safer work practices, and early medical intervention.

Abbreviations:
TFR – Total Fertility Rate
NFHS – National Family Health Survey
DBCP – Dibromochloropropane
SEM – Scanning Electron Microscopy (or Sperm Morphology, depending on context)
PPE – Personal Protective Equipment
ILO C 184 – International Labour Organization Convention 184 (Safety in Agriculture)
EU REACH – European Union Registration, Evaluation, Authorisation, and Restriction of Chemicals
CHC – Community Health Center
WHO – World Health Organization

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14 Genetic & X-Linked Disorders: Counselling Daughters, Nieces, Future Brides

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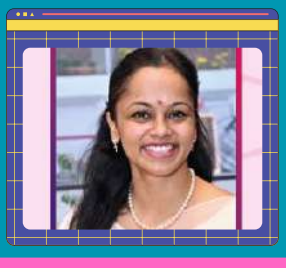


Introduction: Unravelling the X Chromosome's Role in Male Health

Genetic disorders are disorders caused by defect in genome. This disorder or defect could involve one gene (monogenic), multiple genes (Polygenic) or affect entire chromosome. Similarly on basis of nature of inheritance and expression, genetic disorder may be autosomal dominant, autosomal recessive or sex chromosome linked. Some may be hereditary or inherited from one generation to another, while some may appear for first time at time of embryonic development (de novo).

The human X chromosome plays a disproportionately significant role in human genetic disorders, particularly those affecting males. Unlike the 22 pairs of autosomes that constitute the bulk of our genome, the sex chromosomes (X and Y) determine biological sex and follow distinctive inheritance patterns that place males at exceptional vulnerability. Females typically inherit two X chromosomes (XX), while males inherit one X and one Y chromosome (XY). This fundamental biological difference creates a **genetic asymmetry** with profound implications for male health. The hemizygous state of the X chromosome in males means they lack a protective genetic backup system for X-linked genes. When a disease-causing mutation occurs on the male's single X chromosome, there is no corresponding healthy allele to compensate, making males dramatically more susceptible to X-linked disorders than females. Recent research has revealed that the X chromosome is evolutionarily specialized for reproduction and neurodevelopment, explaining why many X-linked disorders manifest as neurological conditions, developmental disabilities, or spermatogenic failure .

Inheritance Patterns: Beyond Simple Recessives

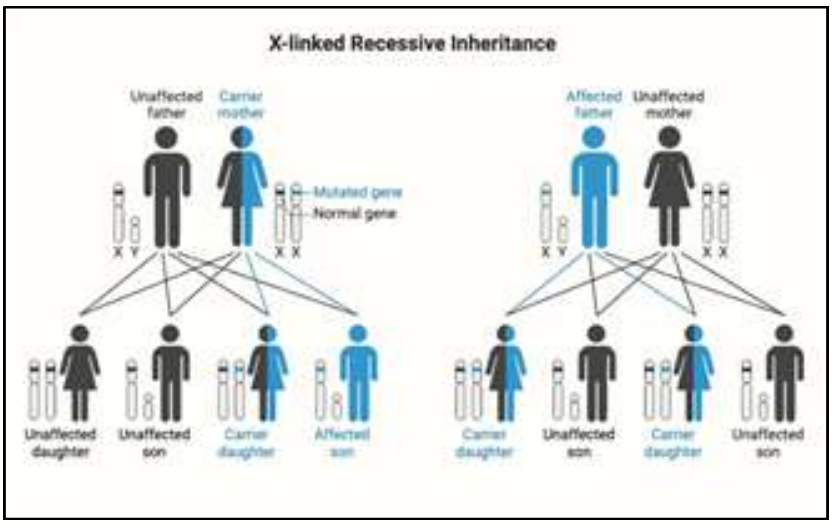
Classic X-Linked Recessive Inheritance[1]

Traditionally, in X-linked recessive inheritance females are typically asymptomatic carriers and males manifest the full disorder. Key characteristics include:

No male-to-male transmission

Diagonal transmission through carrier females, also known as “Knight’s move ”, transmission.

Male-predominant expression with rare, affected females.

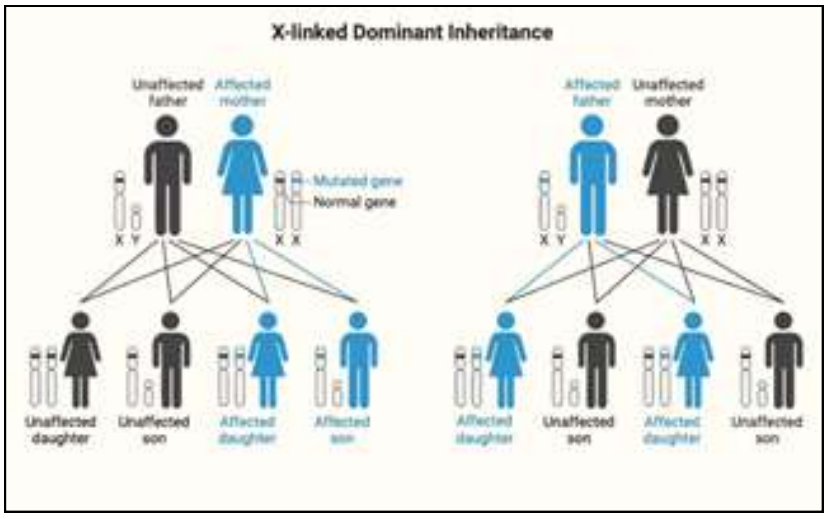


X linked Dominant Inheritance[1]

Both males and females affected, affected females are more in numbers.

Females are less severely affected.

Affected males can transmit the disorder only to their daughters, while affected females can transmit the disorder to sons as well as daughters.



Variable Expressivity and Emerging Concepts

Due to skewed X-inactivation, where one X chromosome is inactivated in more than 85% of cells, approximately 10-15% of female carriers exhibit disease symptoms of variable severity. For instance, in Duchenne muscular dystrophy and haemophilia A, symptomatic carrier females demonstrate that X-linked disorders are not exclusively male condition. This spectrum of expressivity has led prominent geneticists to advocate abandoning the terms "recessive" and "dominant" in favor of simply describing disorders as “X-linked" to better reflect their complex clinical reality .

Parent Genotype	XX (Carrier Female)	XY (Normal Male)
Child Genotype	XX (Unaffected)	XY (Unaffected)
Child Genotype	XX (Carrier Female)	XY (Affected)

Parent Genotype	XX (Carrier Female)	XY (Affected Male)
Child Genotype	XX (Carrier Female)	XY (Unaffected)
Child Genotype	XX (Affected Female)	XY (Affected)

Common X-Linked Disorders Affecting Men

There are at least 533 disorders due to the involvement of the genes on the X chromosome.

Table 1: Major X-Linked Disorders in Males

Disorder	Affected gene	Prevalence in males	Primary manifestations
Duchenne Muscular Dystrophy	DMD	1:5,000	Progressive muscle weakness, respiratory failure
Haemophilia A	F8	1:5,000	Impaired blood clotting, spontaneous haemorrhage
Fragile X Syndrome	FMR1	1:4,000	Intellectual disability, autism spectrum features
X-Linked Agammaglobulinemia	BTK	100:2,00,000	Immunodeficiency, recurrent infections
Alport Syndrome	COL4A5	1:5,000	Kidney disease, hearing loss, eye abnormalities
Charcot-Marie-Tooth (X-linked)	GJB1	Variable	Peripheral neuropathy, foot deformities

Male infertility

Male infertility provides a compelling case study of X-chromosome vulnerability. While the Y chromosome's role in spermatogenesis has been extensively studied, recent evidence highlights the critical importance of X-linked genes in male fertility. Large-scale sequencing of 2,354 infertile men identified RBBP7 as a novel recurrently mutated gene associated with spermatogenic failure[2].

Klinefelter syndrome (47,XXY), affecting 1:500-1:1,000 males, represents the most common sex chromosome aneuploidy and a major genetic cause of infertility. These males experience testicular atrophy, reduced testosterone, and azoospermia due to the presence of the supernumerary X chromosome. Recent studies show that XXY males exhibit a 50-fold higher risk of extragonadal germ cell tumours, emphasizing the cancer risk associated with X-chromosome abnormalities .

Genetic Mechanisms Underlying Male Vulnerability

Lyonization and Its Exceptions

The 1961 Lyon hypothesis[3] proposed that one X chromosome in each female cell undergoes random inactivation during embryonic development. While this mechanism achieves dosage compensation for X-linked genes between sexes, its randomness creates variable expression in heterozygous females.

Evolutionary Dynamics of the X Chromosome

The X chromosome exhibits extraordinary evolutionary dynamics. While initially considered genetically stable ("Ohno's law")[4], modern comparative genomics reveals rapid evolutionary changes, especially in ampliconic regions containing multi-copy genes expressed during spermatogenesis.

Diagnostic Approaches and Challenges

Table 2: Diagnostic Methods for X-Linked Disorders

Method	Applications	Detection Capability	Limitations
Karyotyping	Aneuploidy detection (e.g., Klinefelter), Large chromosomal changes	Resolution >5Mb	requires metaphase cells
FISH	Targeted deletion/duplication analysis	Specific loci detection	Limited to pre-selected targets
Chromosomal Microarray	Genome-wide CNV detection	50kb-100kb resolution	Cannot detect balanced rearrangements
Whole Exome Sequencing	Point mutation detection	Single nucleotide variants	Limited non-coding coverage
Whole Genome Sequencing	Comprehensive variant detection	All variant types including structural	Higher cost; interpretation challenges
Methylation Analysis	Imprinting disorders (Fragile X)	Epigenetic modifications	Disorder-specific

Genetic Testing Strategies & Principles

Genetic counsellors need to gather information about the family history, including the presence of affected individuals and the relationships between them. Testing maybe carrier testing, prenatal testing by CVS/ amniocentesis or pre-implantation genetic testing.

Diagnostic evaluation for X-linked disorders employs a tiered approach.

Traditional karyotyping remains the gold standard for detecting numerical abnormalities like Klinefelter syndrome (47,XXY), Turner syndrome mosaicism (45,X/46,XY), and large structural rearrangements. Its major limitation is resolution (>5Mb), prompting development of more sensitive techniques.

Fluorescence in situ hybridization (FISH) allows targeted assessment of specific loci, such as detecting dystrophin gene deletions in DMD or identifying SHOX gene abnormalities in Léri-Weill dyschondrosteosis.

The advent of chromosomal microarrays improved detection of copy-number variants (CNVs) down to 50-100kb resolution, revealing pathogenic microdeletions at Xp22.31 (including VCX3A and STS) associated with intellectual disability and chondrodysplasia punctata .

Next-generation sequencing revolutionized diagnosis, with whole-exome sequencing (WES) identifying pathogenic single-nucleotide variants in known and novel X-linked genes. Large studies demonstrate WES achieves diagnostic yields of 6-7% for X-linked causes in developmental disorders. Whole-genome sequencing (WGS) offers further advantages in detecting complex structural variants and deep intronic mutations, though its clinical utility remains under evaluation. Specialized tests like methylation analysis and Southern blotting remain essential for disorders like Fragile X syndrome where epigenetic silencing rather than coding mutation causes disease.

Reproductive options

Affected carrier maybe offered following reproductive options- prenatal testing/ preimplantation genetic testing/ egg donation/ sperm donation or adoption.

Reproductive Option	Risks	Benefits
Prenatal Diagnosis	Miscarriage risk associated with CVS or amniocentesis	Allows for informed decision-makin about pregnancy
PGD	Risk of misdiagnosis, multiple pregnancy	Allows for selection of unaffected embryos
Egg Donation	Risk of ovarian hyperstimulation syndrome	Avoids transmission of X-linked disorder
Sperm Donation	Risk of transmitted infections	Avoids transmission of X-linked disorder
Adoption	Emotional and psychological challenges	Provides a loving home for a child

Genetic Counselling Complexities

Genetic counselling for X-linked disorders presents unique challenges. When a pathogenic variant is identified in a male proband, cascade testing of female relatives determines carrier status. However, variable penetrance in females complicates risk assessment. For example, while hemizygous males with a pathogenic OTC (ornithine transcarbamylase deficiency) mutation typically develop life-threatening hyperammonemia in infancy, heterozygous females range from asymptomatic to severely affected depending on X-inactivation patterns. Counselling must address the 50% recurrence risk for carrier females and the reproductive options available, including prenatal diagnosis (chorionic villus sampling, amniocentesis), preimplantation genetic testing (PGT), and emerging non-invasive prenatal screening approaches.

A critical counselling consideration involves distinguishing pathogenic mutations from benign variants. Population databases reveal numerous rare missense variants in X-linked genes, with recent evidence suggesting only 13% of inherited rare missense variants in known developmental disorder genes are pathogenic in males. This highlights the importance of multifactorial assessment incorporating segregation analysis, biochemical assays, and functional studies before reporting variants as pathogenic.

Unanswered Genetic Questions

Despite significant advances, fundamental questions persist regarding X-chromosome biology and pathology:

- What mechanisms control skewed X-inactivation, and can they be therapeutically modulated?
- How do epigenetic modifications regulate X-chromosome expression during spermatogenesis?
- What explains the residual male bias in developmental disorders not attributable to known X-linked causes?

Large-scale initiatives like the Deciphering Developmental Disorders (DDD)[5] study (n=11,044) continue refining our understanding of X-linked contributions to male pathology. Their findings indicate that approximately 41% of pathogenic X-linked variants in males arise de novo, while 59% are inherited from carrier mothers. Surprisingly, only 36% of mutations in known X-linked recessive genes occur de novo, suggesting distinct mutational mechanisms between gene classes.

Technological Frontiers

Emerging technologies promise transformative advances:

- Single-cell multi-omics: Simultaneously analysing gene expression, chromatin accessibility, and methylation patterns in individual cells will illuminate the dynamics of X-chromosome inactivation during development
- Long-read sequencing: Resolving complex repetitive regions (e.g., in Fragile X) and precisely mapping structural variants
- Stem cell-derived gametogenesis: Generating functional sperm from induced pluripotent stem cells (iPSCs) of infertile XXY men
- In vivo base editing: Correcting point mutations without double-strand DNA breaks, potentially safer than conventional CRISPR/Cas9

Additionally, artificial intelligence algorithms are being trained to predict variant pathogenicity by integrating clinical, functional, and population data, addressing the "variant interpretation bottleneck" that currently limits diagnostic utility.

Conclusion: Toward Precision Medicine for X-Linked Conditions

The genetics of X-linked disorders in men reveals both the vulnerabilities inherent in the human genome and the remarkable resilience of those affected. The distinctive genetic architecture of males—with their single X chromosome—creates therapeutic opportunities through targeted approaches impossible in autosomal conditions.

Current research transcends simplistic notions of "recessive" disorders, recognizing instead the “spectrum of X-linked expression” influenced by lyonization, epigenetics, and modifier genes. This nuanced understanding informs genetic counselling, where personalized risk assessment replaces categorical predictions. The expanding therapeutic arsenal—from enzyme replacement to gene therapy—offers unprecedented hope, though equitable access remains challenging. As science advances, the integration of genetic, epigenetic, and environmental factors will enable truly personalized management of X-linked disorders. Ongoing research into X-chromosome biology promises not only better treatments for affected men but deeper insights into fundamental mechanisms of gene regulation, cellular differentiation, and human development.

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15 Elderly Fathers: Frailty, Dementia & Daughters as Default Care-givers

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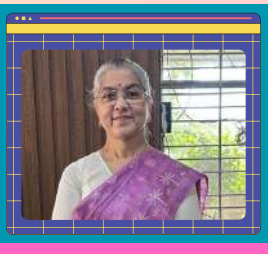

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1 Introduction

Demographic transition has created a unique cohort of middle-aged Indian women—often themselves doctors—who must earn a livelihood, raise young children and simultaneously nurse frail, cognitively impaired fathers. Nationally representative United States data show that 24.3 % of adult daughters now belong to this "sandwich generation," a group that numbers 2.5 million caregivers and is growing fast (pmc.ncbi.nlm.nih.gov). Comparable longitudinal data for India are sparse, but the drivers are identical: delayed first childbirth, increasing life expectancy and shrinking family size. The burden is immense: during the COVID-19 pandemic 51.5 % of sandwich caregivers reported serious suicidal thoughts—eight times higher than adults who were neither parents nor caregivers (pmc.ncbi.nlm.nih.gov).

The aim of this chapter is to provide practical, culturally consonant guidance for daughters looking after ageing fathers with frailty or dementia, while foregrounding their own health and wellbeing. Evidence from two recent studies—the National Profile of Sandwich Generation Caregivers and the qualitative analysis of Millennial caregivers—has been woven into Indian practice realities to offer an integrated road map for home care.

2 Dual-Role Care-giving: Magnitude & Impact

2.1 Time, money and emotions

Sandwich daughters devote a median 77 hours every month to elder-care on top of child-care and paid employment, yet remain the primary bread-winners in nearly 70 % of households (pmc.ncbi.nlm.nih.gov). Compared with peers caring only for parents, they are twice as likely to face substantial financial difficulty (23.5 % vs 12.2 %) and 40 % more likely to report intense emotional distress (44.1 % vs 32.2 %) (pmc.ncbi.nlm.nih.gov). Care-giver role overload—feeling exhausted, having no personal time and being overwhelmed by changing needs—scores significantly higher (mean 2.9 vs 2.4/8).

2.2 Health risks for daughters

Qualitative interviews with 42 millennial caregivers (mean age 34 years) revealed four recurrent themes: disruption of life-course milestones, uncertainty about employment and

health insurance, balancing multiple identities and lack of tailored support (pmc.ncbi.nlm.nih.gov). Participants averaged 51 care-giving hours per week, assisted with ten daily-living tasks and frequently postponed career advancement or family planning. Mental-health sequelae ranged from insomnia and agitation to shame, isolation and clinical depression (pmc.ncbi.nlm.nih.gov).

Key message: Care plans for elderly fathers must simultaneously contain provisions for the daughter's physical, financial and psychological safety; otherwise the care dyad collapses

3 Millennial & Gen-X Daughters: Distinct Stressors

Digital-native daughters are comfortable with tele-consults and app-based monitoring but struggle with precarious jobs, gig-economy contracts and limited social security. Compared with older caregivers they:

- accumulate less wealth, yet spend more out-of-pocket on parental care;
- are more ethnically and geographically mobile, so social support is thin;
- carry equal gender expectations at home and work, compounding overload.

Interventions that work best for this cohort are rapid, mobile-enabled and peer-supported (e.g., moderated WhatsApp groups, five-minute mindfulness podcasts, AI-guided medication trackers) (pmc.ncbi.nlm.nih.gov).

4 Managing Frailty in Elderly Fathers

4.1 Age-friendly home redesign

Universal-design tweaks—zero-step entry, first-floor bedroom–bathroom, grab bars, raised commode and ample glare-free lighting—dramatically cut falls without spoiling aesthetics . Lever handles, widened doorways (90 cm) and raised plug points ease arthritis-ridden hands and wheelchair navigation.

4.2 Safety first

One in four Indians above 65 years falls annually; inexpensive aids such as canes, walkers, shower chairs and lift recliners are life-savers. Sixty per cent of persons with dementia wander; door alarms, GPS shoe-insoles and bed-exit sensors avert nocturnal escapes.

4.3 Assistive technology

- Medical alert systems with fall detection;
- Integrated smart-home dashboards for remote control of doors, stoves and blinds;
- Health-tracking apps uploading blood pressure or glucose data to clinicians;
- Voice-activated video calling devices to combat isolation.

5 Telegeriatrics & Hybrid Care Models

Virtual consultations with geriatricians, psychiatrists, physiotherapists and social workers shorten waiting times, trim travel costs and bridge rural–urban gaps . Remote patient-monitoring platforms can flag arrhythmias or sudden weight loss early, while digital cognitive tests allow periodic dementia staging.

Indian considerations

- Check broadband reliability; supplement with 4G dongles.
- Obtain written informed consent in local language; ensure Health Data Management Policy compliance.
- Balance screen-time with human touch—plan quarterly in-person reviews.

6 Financial & Legal Safeguards

Long-term dementia care can erode family savings and even lead to mortgage default. Twenty per cent of dementia caregiver households in the West report food insecurity ; anecdotal Indian evidence mirrors this. Early documentation is therefore non-negotiable.

Instrument	Purpose	Ideal timing
Durable Power of Attorney	Delegate asset management even after incapacity	While father is still lucid
Health-care POA / Advance Directive	Name proxy and record treatment preferences	Early diagnosis
Living Will	State wishes regarding life support	Once capacity is verified
Standard Will	Estate distribution post-mortem	Immediately, review biennially
Living Trust	Avoid probate, manage complex assets	Wealthier families
Guardianship	Court-appointed substitute only if no POA	Last resort
Portable Medical Orders (POLST)	Emergency instructions (e.g., no CPR)	Advanced frailty

Copies must be lodged with caregivers, lawyers and treating hospitals. Banks increasingly accept e-POA; insist on two witnesses and a video record for incontestable validity.

7 Respite, Support Services & Policy Gaps

Planned respite—an hour for errands, an adult-day-care afternoon or a week-long admission—reduces burnout and improves father's care quality . Yet national data reveal that sandwich caregivers rarely access formal support except for Medicaid assistance (24.8 % vs 14.7 %) (pmc.ncbi.nlm.nih.gov).

7.1 Building a support ecosystem

- Community Health Centres can host day-care clubs with physiotherapy and cognitive games.
- Corporate HR policies should extend work-from-home flexibility and carers' leave to sandwich employees.
- Digital peer networks—millennial caregivers prefer app-based forums where experiences and hacks are shared instantly (pmc.ncbi.nlm.nih.gov).
- Insurance products tailored for dementia home-care and bariatric aids must be developed under IRDAI's innovative-product window.

7.2 Advocacy priorities for India

1. Include sandwich caregivers as a vulnerable group in the National Mental Health Programme.
2. Offer income-tax rebates for installing universal-design home modifications.
3. Mandate caregiver-inclusive discharge summaries under NABH accreditation.

8 Conclusion

Elder-care in India is silently powered by daughters who juggle two generations, a career and their own mid-life transitions. Evidence shows they work longer hours, suffer deeper financial stress and face higher mental-health risk than other caregivers. A holistic plan—age-friendly housing, vigilant safety, telegeriatrics, watertight legal cover, scheduled respite and policy advocacy—can protect both father and daughter, honouring autonomy without sacrificing wellbeing.

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Male Mental Health Across the life-course & Women's well-being

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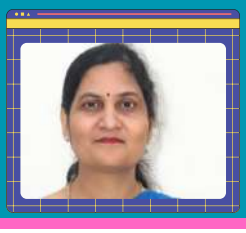

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Abstract

Modern clinical practice increasingly recognizes the hidden yet pervasive influence of male mental health on women's well-being. Men often experience mental illness in silence, resulting in serious consequences not just for themselves but for their families, particularly women. From young adulthood to old age, untreated male mental disorders—especially depression, substance abuse, and suicidal behavior—adversely affect women's mental, physical, and reproductive health. This article provides a clinical overview for gynaecologists, highlighting key life-course patterns, national data trends in India, and practical screening and referral strategies to address the silent epidemic.

Introduction

Male mental health remains an under-discussed domain in medicine, particularly within women's health contexts. In India, societal expectations, gender roles, and cultural norms often prevent men from expressing emotional distress or seeking professional help. Consequently, mental illness in men is frequently overlooked, undiagnosed, or poorly treated. This silence has profound repercussions for women—spouses, mothers, daughters—who are emotionally, psychologically, physically, and economically affected by the man's mental health struggles. As frontline clinicians who care for women through all stages of life, gynecologists must understand how male mental illness shapes the broader social and clinical landscape of women's health.

Male Mental Health Across the Life-Course

Young Adulthood (15–29 years)

This life stage is marked by identity formation, career pressures, social expectations, and new relationships. Indian data shows men in this age group have the highest suicide rates. Depression and anxiety are common but often manifest as aggression, withdrawal, or risk taking. Alcohol or drug use frequently begins here, with long-term relational and health impacts.

Midlife (30–59 years)

Meninmidlife typically face chronic occupational stress, financial responsibilities, and evolving family dynamics. Many struggle with emotional regulation, leading to reduced intimacy, poor communication, and substance abuse. These stressors often cause or exacerbate tension within households, contributing to psychological distress in female partners.

Older Age (60+ years)
Retirement, physical illnesses, social isolation, and the loss of purpose can predispose older mentodepression. Many rely on female caregivers—spouses or daughters—resulting in emotional fatigue, caregiver burnout, and neglect of the women's own health needs.

Indian Context: Mental Health and Gender Disparities
National Data Highlights

- The National Mental Health Survey (2015–16) reported that nearly 14% of India's population suffers from mental disorders.
- Treatment gaps exceed 70%, reflecting poor access, stigma, and cultural barriers.
- Men account for over two-thirds of suicide deaths, especially in young adults.
- Alcohol and substance abuse disorders are more common among men, leading to domestic violence, economic instability, and emotional neglect.
- While women report higher prevalence of depression and anxiety, men's depression is underdiagnosed due to atypical presentation and stigma around emotional vulnerability.

Cultural Considerations
Indian society often equates masculinity with stoicism and control. Emotional expression, especially sadness or fear, is discouraged in boys and men. This not only delays help-seeking but also reinforces aggressive or avoidant coping patterns that create distress for family members, especially women.

The Ripple Effect on Women's Health

1. Psychological and Emotional Distress
- Partners of mentally ill men often suffer from anxiety, depression, emotional burnout, and low self-esteem.
- Substance abuse, especially alcohol, increases the risk of intimate partner violence (IPV), a major contributor to trauma and psychological morbidity in women.
- Perinatal mental health is deeply affected by lack of partner support; pregnancy and postpartum periods become more vulnerable to depression or anxiety when the male partner is emotionally unavailable or abusive.

2. Physical Health and Somatic Complaints
- Chronic stress leads to psychosomatic symptoms such as fatigue, headaches, gastrointestinal upset, and insomnia.
- Stress-related inflammation contributes to the development or worsening of chronic conditions like hypertension, diabetes, and autoimmune disorders.
- Womenexposedtolong-term caregiving or domestic abuse show elevated cortisol levels, immune suppression, and higher rates of chronic diseases.

3. Reproductive and Sexual Health

- **Pregnancy Complications**: Maternal stress from emotionally volatile can lead to miscarriage, preterm birth, and fetal growth restriction.
- **Postpartum Challenges:** Poor male partner involvement post-delivery delays bonding, increases maternal workload, and disrupts breastfeeding.
- **Sexual Dysfunction:** Women in strained or abusive relationships often experience dyspareunia, fear of intimacy, or loss of libido.
- **Menopause:** Women facing emotional neglect or psychological abuse may experience aggravated menopausal symptoms and mood disorders.

Clinical Strategies for Gynaecologist's

Gynaecologists can serve as first responders in detecting family-level distress that originates in male mental health. They are often the only professionals women trust enough to disclose psychosocial burdens.

1. Screening and Assessment

- Use validated tools like PHQ-9 and GAD-7 to screen for depression and anxiety in women.
- Incorporate psychosocial history-taking into routine visits. Ask about partner behavior, alcohol abuse, support systems, and conflict at home.
- Be alert to indirect signs: frequent unexplained symptoms, multiple miscarriages, low weight gain in pregnancy, or delayed ANC visits may indicate stress related to partner issues.
- Screen for intimate partner violence and coercion sensitively and confidentially.

2. Counselling and Psychoeducation

- Normalize discussion around mental health and challenge stigma through conversation.
- Explain that male mental illness is common, treatable, and not a sign of personal weakness.
- Encourage women to suggest mental health support to their partners without fear or guilt.
- Provide culturally appropriate explanations to debunk myths around masculinity and emotional expression.

3. Referrals and Multidisciplinary Support

- Create a directory of local psychiatrists, psychologists, and counsellors, especially those trained in family and marital therapy.
- Collaborate with ASHAs, social workers, and community nurses for follow-up.
- Refer to perinatal mental health teams when available, especially in high-risk pregnancies or when intimate partner violence is suspected.

4. Documentation and Safety

- Maintain thorough documentation of any disclosures or red flags, particularly in intimate partner violence cases.
- Develop safety plans for women in unsafe environments—this may include emergency contacts, legal aid, or shelter information.
- Adhere to mandatory reporting laws, especially in cases involving minors or life threatening harm.

Gatekeeper Training in Mental Health: PRP and ASIST Models The Gatekeeper Approach Gatekeepers are non-mental health professionals who are trained to identify individuals in psychological distress, provide initial support, and refer appropriately. Given their regular contact with vulnerable populations, gynaecologists, ASHAs, nurses, and ANMs can serve as effective gatekeepers.

Gatekeeper Training in PRP (Prevention and Response Program) PRP is a community-centered model widely used in maternal health and gender-based violence prevention. Incorporating mental health screening and male involvement into PRP makes it a robust framework for addressing family dynamics that impact women's health.

Key Features of Gatekeeper Role in PRP:

- Recognize emotional or behavioral symptoms in male partners, even if the womanis the primary patient.
- Respond with empathetic listening and non-judgmental support, using tools like the WHOLIVES approach.
- Refer the woman and (if feasible) her partner to mental health professionals.
- Reinforce the link between mental health and reproductive outcomes during antenatal care, infertility counselling, and postpartum visits.

Gatekeepers trained under PRP frameworks can disrupt the cycle of silence and help prevent the long-term physical and emotional toll on women

ASIST (Applied Suicide Intervention Skills Training)

ASIST is a globally recognized model that trains laypersons and professionals in suicide prevention first aid. Given India's high male suicide rate, especially among younger men, incorporating ASIST into reproductive health care settings can save lives.

Relevance for Gynecologists:

- Recognize verbal cues, emotional numbness, or hopelessness shared by women about their partners.
- Understand how male suicidality impacts women—emotionally, economically, and in caregiving roles.
- Learn intervention skills to initiate conversations, ensure immediate safety, and connect families with professional support.

- Strengthen links with emergency mental health services and suicide helplines. Even brief interactions using ASIST principles can de-escalate crises and build a bridge to care. System-Level and Community Interventions Gynaecologists' efforts can be amplified through systemic support and multi-sectoral collaboration.

1. Task Sharing and Integration

- Train non-specialist providers (nurses, ASHAs) to screen for mental distress.
- Integrate mental health modules into ANC, PNC, and family planning visits.
- Use existing maternal health registers to track families facing psychosocial vulnerabilities.

2. Community Engagement

- Partner with NGOs, self-help groups, and panchayats to raise awareness.
- Organize men's group sessions focused on emotional literacy and healthy masculinity.
- Use folk media or digital content to discuss mental health in culturally resonant ways.

3. Policy and Programmatic Advocacy

- Advocate for mental health inclusion in reproductive health policies and budgets.
- Promote male-focused interventions within NRHM, RMNCH+A, and state-level health programs.
- Push for institutional funding for integrated family mental health units.

4. Digital Health and Innovation

- Promote tele-mental health services and 24/7 helplines for rural populations.
- Use SMS-based screening tools for mental distress in community surveys.
- Support mobile apps for family emotional health and safe communication. Professional Development for Gynecologists
- AttendCMEsonperinatal and family mental health.
- Build a network of mental health professionals for collaboration.
- Participate in interdisciplinary case discussions and referral audits.
- Contribute to clinical research on the indirect impact of male mental health on women.

Conclusion

Male mental health, though often neglected and shrouded in stigma, casts a long shadow on women's health and well-being. For gynecologists, understanding and addressing this intersection is not just relevant—it is essential. By adopting a biopsychosocial approach, building screening and referral systems, and leveraging community resources, gynecologists can serve as powerful gatekeepers to healthier families. In doing so, they not only safeguard their female patients' health but also help address the deeper emotional currents that shape family life in India.

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17 Positive Masculinity Gender-Equitable Norms

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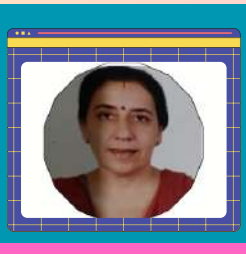

Positive Masculinity Interventions: Promoting Gender Equality and Social Change

Positive masculinity interventions offer a critical opportunity to challenge gender norms and masculine ideals that obstruct sexual and reproductive health and perpetuate gender inequality. By engaging men and boys, these interventions aim to foster a more equitable society, addressing the interplay of gender inequalities with other structural factors such as power imbalances, social, economic, and political dynamics.

The Role of Social Norms and Structures

Social norms and structures define gender roles, often limiting individual agency. To achieve gender equality, engaging men and boys is essential. This involves encouraging men to examine the roles they occupy in their communities, cultures, and economies, and to understand how these roles impact the lives of women and girls. Gender inequalities do not exist in isolation but intersect with other structural inequalities, including economic stress, mental health issues, and substance abuse, which can exacerbate toxic masculinities.

Political upheavals often shift gender dynamics, either advancing or hindering equality. Effective interventions combine addressing gender dynamics with tackling the underlying causes of harmful behaviors, such as economic instability, mental health challenges, or substance abuse, leading to more sustainable outcomes.

Promising Interventions for Positive Masculinity

Interventions that have shown promising results include:
1)Employment Support and Livelihood Skills: Providing men with economic opportunities and skills training to reduce financial stress and promote stability.
2)Conflict Prevention and Resolution: Programs that teach non-violent communication and conflict resolution skills to foster healthier relationships.
3)Family Counseling and Mental Health Care: Supporting men in addressing emotional and psychological challenges to improve family dynamics.
4)Psychosocial Support for Violence and Anger Management: Offering tools and strategies to manage anger and reduce gender-based violence.
5)Substance Use Care: Providing treatment and support for substance abuse to address its role in perpetuating harmful behaviors.

These interventions have demonstrated success when they combine a focus on dismantling harmful practices with explicit efforts to promote gender equality.

Community-Level Engagement for Systemic Change

Successfully addressing social norms requires moving beyond individual and household-level interventions to engage entire communities and target key institutions. For system-wide change, gender inequality must be treated as a community issue in which men are actively involved, not as isolated actors but as part of a broader social ecosystem.

Applying a socio-ecological model—encompassing individual, household, community, and societal levels—creates an enabling environment for transformative results. Initiatives engaging men have achieved success by forming partnerships with women's rights organizations and involving women in their design and implementation. This collaborative approach ensures that interventions are inclusive and aligned with the goal of gender equality.

The engagement of men and boys has been successfully facilitated by fostering peer-based connections and creating safe, non-judgmental spaces. These environments encourage open dialogue, critical self-reflection, and the development of gender-equitable attitudes and behaviors.

MenEngage India: A Case Study

MenEngage India, established in 2023, is a network of individuals and organizations dedicated to working with men and boys to build a more just and peaceful society. Its members are active in fields such as community development, public health, education, and the arts, collaborating closely with women's networks at state and national levels to promote gender equality.

Gender Equality Measures (GEM) and GEMS Program

The United Nations Development Programme's Gender Equality Measure (GEM) seeks to quantify gender inequality globally, providing a framework to assess progress and identify gaps. Building on this, the Gender Equality and Mainstreaming in Schools (GEMS) program promotes gender equality and reduces violence by engaging students in critical thinking and self-reflection.

GEMS draws inspiration from successful Indian initiatives like Yaari Dosti for young men and Sakhi Saheli for young women. These programs foster gender-equitable attitudes and behaviors among youth, encouraging them to challenge harmful norms and contribute to a more equitable society.

Conclusion

Positive masculinity interventions are a vital tool for dismantling harmful gender norms and promoting equality. By addressing the root causes of toxic behaviors, engaging communities, and fostering partnerships with women's rights organizations, these initiatives create lasting, transformative change. Through sustained efforts, such as those led by MenEngage India and the GEMS program, men and boys can become active allies in the pursuit of a more just and equitable world.

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18 Reproductive Autonomy & Contraception: From Vasectomy to Condom Negotiation

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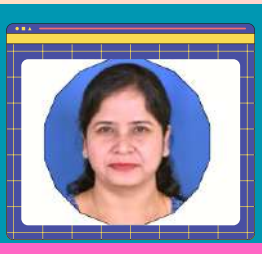

In the evolving landscape of reproductive health, the active participation of men in contraception has become increasingly recognized as a cornerstone of shared responsibility, gender equality, and improved health outcomes. From permanent methods like vasectomy to everyday practices such as condom negotiation, these choices significantly influence women's lives, relationships, and societal perceptions of reproductive autonomy.

The Role of Male Contraceptive Methods

Historically, contraceptive responsibility has largely fallen on women, often leading to disparities in reproductive health outcomes. However, research and surveys indicate a growing acceptance and utilization of male-centered methods.

Vasectomy: Progress and Challenges

Vasectomy, a surgical procedure that involves cutting or sealing the vas deferens to prevent sperm from reaching semen, is a highly effective, safe, and cost-effective method of male sterilization. According to Sharma R S et al. (2013), non-scalpel vasectomy (NSV) has gained significant traction in India due to its simplicity, minimal invasiveness, and high safety profile. The procedure's advantages include fewer complications, quicker recovery, and a higher acceptance rate among men. Despite these benefits, challenges such as cultural misconceptions, lack of awareness, and limited availability hinder widespread adoption.

The NFHS-5 Fact-sheet (2022) highlights that although sterilization remains a dominant form of contraception in India, male sterilization accounts for only a small fraction of total sterilizations. Increasing awareness, improving access, and dispelling myths about vasectomy's reversibility and safety are crucial steps toward expanding men's participation in permanent contraception.

Condoms & Negotiation

Condom use remains the most accessible and non-permanent method, offering dual protection against pregnancy and STIs. Effective condom negotiation involves open communication between partners, fostering mutual respect and shared decision-making. When men take an active role in condom use, it promotes equality within relationships and reduces the disproportionate contraceptive burden on women.

Impact on Women's Lives

The involvement of men in contraception directly benefits women by:

-Reducing Unintended Pregnancies: Shared responsibility ensures consistent and correct use of contraceptives, decreasing the likelihood of unplanned pregnancies. This is particularly crucial in contexts where women may face barriers accessing or using female-controlled methods.

- Enhancing Relationship Dynamics: Open discussions about contraception foster trust, reduce stigma, and challenge traditional gender roles that often assign reproductive decisions solely to women.

-Alleviating Contraceptive Burden: When men participate actively—whether through vasectomy or condom use—women experience less physical and emotional stress associated with hormonal or invasive methods.

Overcoming Barriers and Building Opportunities

Despite the progress, societal and cultural barriers persist. Many men remain hesitant due to misconceptions about vasectomy, fears of side effects, or societal stigma. As Sharma R S et al. (2013) note, addressing these challenges requires targeted education, community engagement, and health system support.
Furthermore, integrating reproductive health education into broader health programs can empower men with knowledge and encourage positive behaviors. Policies that promote male sterilization and condom use as shared responsibilities can accelerate progress.

Moving Forward

Promoting male contraceptive methods and encouraging condom negotiation are essential for advancing reproductive autonomy and gender equity. Strategies include:

Educational Campaigns: Raising awareness about vasectomy's safety and reversibility, and promoting positive attitudes toward shared contraceptive responsibility.
- Accessible Services: Ensuring availability of vasectomy and condoms in healthcare facilities, especially in rural and underserved areas.
- Inclusive Counseling: Healthcare providers should actively involve men in reproductive health discussions, dispelling myths and addressing concerns.

Conclusion

The ripple effects of men's active participation in contraception extend far beyond individual choices, influencing women's health, relationship dynamics, and societal norms. As research and surveys indicate, increasing the adoption of methods like vasectomy and fostering open condom negotiation can lead to healthier, more equitable relationships and communities. Embracing shared reproductive responsibility not only empowers men but also significantly enhances women's autonomy and well-being—ripples that reverberate across lives and generations.

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19 Technology & Telehealth: Joint Monitoring of Couples' Health

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Tele-monitoring, also known as Remote Patient Monitoring (RPM), involves using technology to track a couple's health data remotely, often through wearable devices and digital platforms. This allows for continuous monitoring of vital signs, medication adherence, and overall health status, potentially improving health outcomes and management, especially for chronic conditions.

How it works:

- **Wearable devices:**

Couples can use devices like smartwatches, fitness trackers, or specialized sensors to monitor various health metrics such as heart rate, blood pressure, blood sugar, and activity levels.

- **Data transmission:**

These devices transmit the collected data to a secure platform or directly to healthcare providers.

- **Remote analysis and intervention:**

Healthcare professionals can analyze the data, identify potential issues, and provide timely interventions, such as medication adjustments or lifestyle recommendations.

- **Telehealth integration**:

RPM often integrates with telehealth services, allowing for virtual consultations and remote support. Benefits for couples:

- **Improved chronic disease management:**

RPM can help couples manage conditions like diabetes, hypertension, and heart disease by providing continuous monitoring and timely interventions.

- **Early detection of health issues**:

By monitoring vital signs and activity patterns, telemonitoring can help identify potential health problems early on, potentially preventing complications.

- **Increased convenience and accessibility:**

Couples can receive healthcare remotely, reducing the need for frequent in-person visits, especially for those with mobility issues or living in remote areas.

- **Enhanced communication and engagement:**

RPM can facilitate better communication between couples and their healthcare providers, leading to increased patient engagement and empowerment.

- **Cost-effectiveness:**

In some cases, RPM can help reduce healthcare costs by preventing hospital readmissions and unnecessary emergency room visits. Potential challenges:

- **Technology adoption and usability:**

Some individuals may find it challenging to use the technology or may prefer traditional methods of healthcare.

- **Data privacy and security:**

Ensuring the privacy and security of patient data is crucial when using remote monitoring systems.

- **Integration with existing healthcare systems**:

Integrating RPM into existing healthcare workflows and systems can be a challenge. Examples of telemonitoring in couple's health:

- **Monitoring blood pressure:**

Using a connected blood pressure monitor, couples can track their blood pressure readings and receive alerts if there are significant deviations from their normal range.

- **Managing diabetes:**

Continuous glucose monitoring (CGM) devices can track blood sugar levels in real-time, helping couples with diabetes manage their condition more effectively.

- **Tracking physical activity and sleep patterns:**

Wearable devices can monitor physical activity levels, sleep patterns, and heart rate variability, providing insights into overall health and well-being.

- **Remote consultations:** Telehealth platforms can facilitate virtual consultations with healthcare professionals for routine check-ups, medication management, or counseling.

20 Policy & Systems Integration: Making Men's Health a Women's Issue

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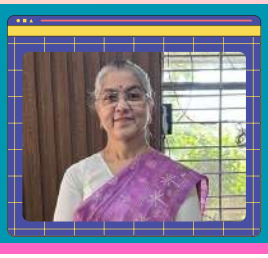

Opening Reflections – looking back to look forward

Over the last nineteen chapters this e-magazine has travelled a long arc—beginning with the biology of the Y chromosome, moving through mental-health burdens, domestic-violence realities, cardio-metabolic risks, genetic legacies, infectious outbreaks, sexual health, workplace exposures, and the often-neglected role of men as caregivers. Each author has peeled back one more layer of the same truth: **women's health is inseparably braided with the health attitudes, behaviours, and bodies of the men who share their homes, workplaces and public spaces.**

Readers have met the young wife whose anaemia worsened because her husband controlled the family's menu; the adolescent girl whose schooling stalled after her father's depression drained household savings; the expectant mother whose tuberculosis flared when her spouse refused testing; and the post-menopausal patient whose cardiovascular risk ballooned in tandem with her partner's sedentary lifestyle. These stories, threaded through epidemiology and policy analysis, underline a simple proposition: making men healthier is not a diversion from the women-and-children agenda—it is the hidden accelerant.

This final chapter brings the conversation full circle: How can India's flagship public-health programmes merge their lanes so that **male outreach directly fuels maternal, newborn and nutritional gains**? What numbers will tell us we are succeeding? And where will the money come from?

1. Why convergence now?

- **Economic common-sense** – The National Family Health Survey-5 shows that almost three-quarters of household spending decisions on facility delivery or newborn care involve men, yet barely one quarter of fathers attend even a single antenatal consultation. (dhsprogram.com) When the key financier is left out of the counselling loop, advice dies before it reaches the dinner table.
- **Care cascade** – A father screened early for hypertension postpones stroke or chronic kidney disease, thereby sparing his spouse years of unpaid caregiving and catastrophic health expenditure. The saving is exponential, not additive.
- **Gender equity lens** – True partnership in pregnancy nudges social norms: when husbands queue for tetanus–diphtheria boosters or nutrition counselling, the village recognises caregiving as everyone's business, not "woman's work."

2. Four flags on one pole

India is fortunate to possess four large-scale, tax-funded programmes with overlapping footprints in almost every block:

Programme	Core mandate	Convergence leverage for men
NHM / RMNCH+A 2.0	Safe pregnancy, delivery, new born survival	ASHA incentives, Village Health Nutrition & Sanitation Days, digital RCH portal
NPCDCS	Diabetes, hypertension, cancers, stroke	Ready-made screening kits, NCD counsellors inside PHCs
NACO	HIV & sexually transmitted infections	Couple-centred testing, stigma-free counselling cadre
POSHAN 2.0	Maternal–child nutrition & anaemia	Community kitchens, men's self-help groups, micronutrient supply chain

Below we sketch how each can plug into the others rather than running four parallel trains on the same track.

2.1 NHM / RMNCH+A 2.0 – "Men as Partners"

The 2024 roadmap adds a **₹100 bonus to the ASHA for every husband who attends two antenatal group sessions** and signs a birth-preparedness card. The updated ANMOL mobile app now pushes reminders to the spouse's phone, complete with 30-second animations on danger signs in pregnancy. Field pilots in Madhya Pradesh show a 40 % rise in escorted ANC visits within six months of rollout. (nhm.gov.in)

2.2 NPCDCS – From idle waiting to active screening

Picture a typical PHC waiting area: while the pregnant woman's blood is drawn for haemoglobin, her husband scrolls social media. NPCDCS staff can **convert that ten-minute lull into a cardiovascular check-up**—BP, random glucose and tobacco-use brief counselling—documented under his Aadhaar-linked NCD ID. The revised 2023 guidelines formally endorse such "opportunistic screening." (mohfw.gov.in)

2.3 NACO – Couple-centred HIV and syphilis services

Under the 2021 national HIV treatment guidelines, every antenatal clinic must log whether the pregnant woman's partner has been counselled and offered testing. If the couple tests together, results are delivered together, reducing blame and late disclosure. Clinics maintain a **Male Partner Register**—a simple bound book whose cover asks, "Have you protected two lives today?" (naco.gov.in)

2.4 POSHAN 2.0 – Nutrition as a family responsibility

Men traditionally dominate village self-help groups (SHGs) devoted to micro-enterprise. POSHAN now channels micro-grants for kitchen gardens through these male SHGs, linking masculinity with food security rather than cash alone. Anganwadi workers run "balanced-plate pledges" in which husbands publicly promise to serve three colours on their wives' plates.

3. Measuring what we treasure – male-engagement metrics

Existing indicators in HMIS

1. Spouse escort during institutional delivery
2. Male attendance at family-planning counselling
3. Condom pieces distributed

Recommended additions

Indicator	Numerator / Denominator	Target 2027
Male presence at ≥2 ANC contacts	Husbands who signed ANC register / live births	≥ 40 %
Father's visit within 48 h of delivery	Home visits where father was observed caring for new born / live births	≥ 50 %
Shared caregiving index (Day 7)	Fathers who can demonstrate cord care & burping unaided / live births	≥ 45 %

These items will be inserted into the men's questionnaire of NFHS-6, ensuring national comparability while giving states leeway to refine electronic health-record dashboards. District Quality Assurance Committees can reward top-performing facilities with extra NHM flexi-funds, while naming laggards in public gram-sabha posters—transparency as gentle nudge.

4. Money matters – clever ways to pay for inclusion

4.1 Public-finance tweaks

- **Outcome-based borrowing**: The Fifteenth Finance Commission already allows a 0.1 % GSDP borrowing headroom for states that hit certain health milestones. Expanding the basket to include male-attendance-at-ANC gives cash-strapped states a clear fiscal incentive.
- **PM-JAY add-ons**: A proposed "Couple Care Package" will reimburse empanelled hospitals an extra ₹500 if they provide HIV, syphilis and glucose testing to both partners during one episode of care.

4.2 Corporate Social Responsibility (CSR) channels

Health currently attracts 27 % of India Inc.'s CSR, and total spending is projected to treble to ₹ 1.2 lakh crore by FY 2034-35. (csrboximpact.in) Among the promising funnels:

1. **Adopt-a-Block Wellness Pods** – Corporates finance prefabricated kiosks attached to PHCs. The pod, proudly bearing the sponsor's logo, offers quick NCD and HIV screening for men accompanying pregnant partners.
2. **Digital Couple Clinics** – IT giants provide tele-consult cabins where obstetricians, diabetologists and counsellors co-manage couples, saving travel time for rural families.
3. **Workplace "Dad Ready" programmes** – Manufacturing plants integrate antenatal education, smoking-cessation and post-natal leave sensitisation into routine safety briefings; the cost of released man-hours is logged as in-kind CSR.
4. **Impact investing** – Blended-finance social-impact bonds in Maharashtra are already paying investors when father attendance at two post-natal visits rises by 15 % in eighteen months, at an incremental cost of only ₹ 210 per additional engaged father.

4.3 Micro-insurance & fintech allies

App-based lenders working in agri-value chains can offer discounted crop-loan interest rates to farmers who undergo NCD screening and complete two birth-preparedness classes with spouses—turning health behaviour into tangible economic benefit.

5. Implementation playbook – one village at a time

Step	Activity	Lead actor	Timelines
01	Issue MoHFW Convergence Circular aligning data fields across portals	MoHFW Policy Division	6 months
02	Joint training module on couple communication & GBV screening	National Health Systems Resource Centre	9 months
03	Enable family health-ID linkages in ABDM	National Digital Health Mission	12 months
04	Publish male-involvement scorecards during Gram Sabhas	Panchayati Raj & Rogi Kalyan Samitis	Every quarter
05	Commission implementation research on cultural barriers	ICMR-RFHRC + state medical colleges	Annual

Pilot experience suggests three practical tips:

1. **Start with the calendar –** Identify existing VHND or Anganwadi days to piggy-back male services rather than creating new events.
2. **Use men's preferred channels –** Mix football tournaments, kisan melas and labour-contractor WhatsApp groups to spread messages.
3. **Celebrate early adopters – Issue a "Golden Couple" certificate to pairs completing all checklists; display their selfie on the PHC wall. Social proof converts sceptics faster than any lecture.**

6. Pulling together the threads – lessons from the whole book

The first half of this volume reminded us that men's health problems are not isolated organs but **systems problems**: untreated obstructive sleep apnoea feeds into hypertension; hazardous alcohol use drives traffic injuries and domestic violence; metabolic syndrome shadows erectile dysfunction and depression. The second half argued that **women bear the hidden costs**—lost wages caring for sick partners, complications in pregnancy, inter-generational malnutrition, even epigenetic signatures that predispose daughters to obesity.

Across chapters we saw a recurring trio of solutions:

- **Early screening** (whether for thalassaemia genes, high BMI or HPV) is cheaper than late rescue.
- **Couple-or-family framing** outperforms one-sex interventions—because behaviour is socially negotiated.
- **Digital integration** amplifies reach but must ride on trusted human intermediaries such as ASHAs, Anganwadi Workers and community coaches.

Our closing call, therefore, is to **move from knowledge to knitted action**—aligning budgets, data dashboards and accountability loops so that men's test results, counselling notes and follow-up reminders live in the same digital home as their partners'. When health planners see the entire family on one screen, they will find it impossible to keep men outside the clinic door.

Conclusion – the road ahead

If we succeed, this is the picture we will see in 2030:

- **Four out of ten husbands attend two antenatal visits**, know the mother-and-baby danger signs and can demonstrate newborn cord care.
- **Villages boast kitchen gardens where sons and fathers harvest spinach and amaranth for the evening meal**, and teenage boys can quote the iron content of jaggery as confidently as they recite IPL scores.
- **Factories display "Dad Ready" posters next to safety charts**, and employees compete for badges that grant an extra day of paternity leave.
- **Mobile-app reminders ping both partners simultaneously**—no more "I forgot the date" excuses.
- **Health data dashboards glow green** as maternal deaths, low-birth-weight rates, and catastrophic health spending all tilt in the right direction.

All this is within reach if we let **programme borders dissolve** and allow one budget line to reinforce the next. For policy-makers, the message is: every rupee spent on men becomes a compound investment in women. For corporate leaders: health-conscious men drive productivity and brand loyalty. For clinicians and counsellors: a father who stays for the session is half the battle won. And for readers—be you student, practitioner or curious citizen—remember the through-line of these twenty chapters: **Good men's health is not a rival priority. It is the scaffolding that lets women and children climb higher.**

Let us pick up our stethoscopes, our spreadsheets, our saplings and our social capital, and build that scaffolding—together.

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