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IMPACT OF MODERN LIFESTYLE ON FERTILITY AMONG YOUNG WOMEN

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ABSTRACT

Background*: The modern lifestyle has a significant impact on fertility among young women Of reproductive age, with factors such as sedentary behavior. Poor dietary habits,Stress, and exposure to environmental pollutants disrupting reproductive health and Fertility*
Aim*: To explore the relationship between modern lifestyle factors and fertility among young Women and to identify potential interventions to mitigate the Negative impacts of modern lifestyle on fertility*
Introduction*: Modern lifestyle factors significantly impact fertility among young women . Sedentary behavior, poor diet, stress, and environmental pollutants disrupt reproductive health. A balanced diet, moderate exercise, and stress management can enhance fertility. Lifestyle changes, policy support, and societal interventions are necessary to promote reproductive health and well-being.*
Methods*: Review of research articles from scientific databases such as PubMed and Google Scholar.*
Results*: The review found that diet, weight, exercise, stress, smoking. Alcohol, caffeine,. And environmental exposures significantly impact fertility.*
Conclusion*: Lifestyle changes, policy support, and societal interventions are necessary to mitigate the negative impacts of modern lifestyle on fertility and promote overall well-being.*
KEYWORDS: *Fertility, Lifestyle factors, Women's health, Diet, Exercise, Stress.*

INTRODUCTION

Modern lifestyle refers to the contemporary ways of living, characterized by factors such as sedentary behavior, poor dietary habits, stress, and exposure to environmental pollutants, which can impact reproductive health and fertility[1]

A poor diet can significantly impact female fertility. Consuming low amounts of fruits and vegetables can disrupt hormone regulation and ovulation due to the lack of essential nutrients, antioxidants, and fiber. Additionally, a high intake of processed foods can lead to insulin resistance, inflammation, and hormonal imbalances, all of which can negatively impact fertility. Inadequate omega-3 fatty acids can also affect hormone production, ovulation, and embryo implantation. Furthermore, excessive caffeine and sugar intake can disrupt hormone balance, ovulation, and fertility[2]

Physical inactivity can also significantly impact female fertility. A sedentary lifestyle can lead to insulin resistance and metabolic disorders, which can disrupt hormone regulation and ovulation. However, physical inactivity can lead to chronic inflammation, which can negatively impact fertility and reproductive health[3]

Stress can also significantly impact female fertility. Stress can disrupt hormone production, including cortisol, insulin, and thyroid hormones, which can impact ovulation and fertility. Chronic stress can also delay or prevent ovulation, making it challenging to conceive. Stress can also disrupt the balance of the gut microbiome, which is essential for hormone regulation, immune function, and fertility[4]

Exposure to environmental pollutants can also significantly impact female fertility. Endocrine-disrupting chemicals (EDCs), such as BPA and phthalates, can mimic or interfere with hormones, disrupting ovulation and fertility. Air pollution, particularly particulate matter (PM), has also been linked to reduced fertility, increased risk of miscarriage, and birth defects. Furthermore, exposure to heavy metals, such as lead and mercury, can disrupt hormone regulation, ovulation, and fertility[5]

The World Health Organization (WHO) defines infertility as the inability of a couple to achieve conception after one year of regular unprotected coitus, with primary infertility referring to cases where conception has never occurred, and secondary infertility referring to cases where conception has occurred previously but is no longer possible[6] . The World Health Organization (WHO) estimates that infertility affects approximately 15-20% of couples worldwide, corresponding to 48-72 million couples and over 186 million individuals globally. Approximately 33% of cases are attributed to female, Around 21% of cases are due to male, About 40% of cases involve both male and female factors and Approximately 6% of cases have no identifiable cause . Infertility is a significant global health issue, affecting approximately 17.5% of the adult population—about one in six individuals—worldwide. This

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prevalence is consistent across high-, middle-, and low-income countries, indicating that infertility is a universal concern. In India, infertility rates exhibit regional variations. States such as Goa, Kerala, Tamil Nadu, Karnataka, and Telangana report higher infertility rates compared to northern states. For instance, in Goa, lifestyle risk factors such as smoking, alcohol consumption, and higher prevalence of diseases like diabetes are linked to increased infertility rates[6].

The consequences of these disruptions can manifest as impaired fertility, reduced fecundity, and increased risk of adverse pregnancy outcomes. The consequences of obesity are far-reaching and alarming. Obesity is inextricably linked to an increased risk of developing various chronic diseases, including diabetes mellitus, hypertension, coronary heart disease, and osteoarthritis (CDC, 2020). Moreover, obesity has been conclusively linked to a heightened risk of various malignancies, particularly endometrial, breast and colony cancers (IARC,2018)[7]

This topic aims to explore the relationship between modern lifestyle factors and fertility among women of reproductive age, with a focus on understanding the mechanisms by which lifestyle factors influence reproductive health and identifying potential strategies for mitigating the negative impacts of modern lifestyle on fertility .

LITERATURE REVIEW

Title	Author and year	Factors	Major findings
The changing tide of human fertility.	Skakkebaek NE, Lindahl-Jacobsen R, Levine H, et al 2020.	Increasing prosperity Women's education Shifting life priorities Declining semen quality and testosterone levels Rising testicular cancer Environmental and lifestyle factors (e.g., weight, smoking) Increased use of assisted reproductive technology (ART) Decline in infant and childhood mortality rates.	1.Significant decline in fertility rates over the past 50 years 2. Potential "infertility trap" due to combination of factors 3. Need for social, political, environmental, and lifestyle changes to address issue 4. Complexity of issue requires multifaceted approach
Infertility prevelance and consequences.	Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel,S. Stevens GA. 2012.	Education level Age at marriage Underlying diseases Occupation Addiction Lifestyle factors affecting sperm quality	1.Infertility affects approximately 48.5 million couples worldwide. 2. Majority (34 million) reside in developing nations. 3. Female infertility is more prevalent. 4. Significant emotional and psychological impact on women, including: -Depression - Anxiety - High-risk behaviors 5. Need for addressing infertility as a significant health issue. 6. Importance of understanding causes and consequences to provide adequate support and treatment
The analysis of fertility quality of life and the influencing factors of patients with 3 repeated implantation failure.	Ni Y, Tong C, Huang L, Zhou W, Zhang A 2021.	Advanced age Molecular changes Cellular changes Histological changes. Cellular senescence Inflammaging Epigenetic regulation changes	1.Advanced age impairs endometrial receptivity, affecting implantation rates and pregnancy rates. 2. Endometrial aging alters molecular, cellular, and histological levels. 3. Cellular senescence, inflammaging, and epigenetic changes compromise endometrial function. 4. Need for further research to understand mechanisms of endometrial aging.

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			5. Potential therapeutic options, such as hemolytic agents, may target endometrial aging without affecting decasualization. 6. Understanding endometrial aging can help clinicians better address female infertility.
Modern lifestyle: A threat for the fertility	Chaudhary SA, Manani Y, Pithadiya A, Masram P, Joshi,K. Rathia S.2015.	Environmental factors:Exposure to pollutants Endocrine-disrupting chemicals (EDCs) in plastics, cosmetics, and food packaging Behavioral factors: increased stress levels Poor dietary habits Lack of physical activity	1.Modern lifestyle poses a significant threat to fertility. 2. Various factors contribute to declining fertility rates in both men and women. 3. Adopting a balanced lifestyle can help counteract fertility risks. 4. Essential steps to protect fertility include: - Balanced diet - Regular exercise - Stress management techniques
The impact of lifestyle on fertility and birth rate	Jafari M, Piroozfar P, Fatemifar G,2022.	Diet Lifestyle Exercise Substance use (e.g., excessive alcohol or drug use) Social rates Environmental exposures Social and economic conditions (e.g., delayed parenthood, financial concerns)	1.Lifestyle choices significantly impact fertility and birthrates. 2. Poor lifestyle choices can reduce fertility (e.g., poor nutrition, substance use, high stress). 3. A healthy lifestyle supports conception. 4. Social and economic conditions influence birthrates, with delayed parenthood and financial concern rates.
Effect of Lifestyle factors on fertility	Sharma R, Biedenharn KR, Agarwal A 2013	Exercise Substance use (e.g., excessive alcohol or drug use) Social rates Environmental exposures Social and economic conditions (e.g., delayed parenthood, financial concerns)	1.Lifestyle choices significantly impact fertility and birthrates. 2. Poor lifestyle choices can reduce fertility (e.g., poor nutrition, substance use, high stress). 3. A healthy lifestyle supports conception. 4. Social and economic conditions influence birthrates, with delayed parenthood and financial concern rates.
Lifestyle and Fertility: The Influence of Stress and Quality of Life on Female fertility	Palomba S, Daolio J, Romeo S, Battaglia FAB, Marci R.2020	Stress Quality of life Diet Physical activity Mental well-being	1.Hormonal imbalance: Chronic stress increases cortisol levels, suppressing the HPO axis. 2. Menstrual irregularities: High stress levels can cause delayed or missed periods. 3. Reduced ovarian function: Stress can lead to difficulties in conception. 4. Reduced implantation
The economics of fertility: A new era	Doepke M. Hannusch A. Kindermann I. Fertilt M .2023	Economic development Gender equality Supportive family policies	1.Traditional economic models no longer fully explain fertility trends. 2. Higher gender equality and supportive policies can promote higher fertility rates.

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		Flexible work environments Societal structures balancing work and family life	3. Economic development alone does not predict declining birth rates. 4. Societal structures and policies play a crucial role in shaping fertility trends. 5. A new era in fertility economics requires policymakers to rethink approaches to address population
Fertility and modernity	Doepke M. Hannusch A. Kindermann I. Fertilt M.2022	Modernization Cultural values Economic development Technological advancements Individualism Changing gender roles Access to reproductive technologies	1.Modernity's impact on fertility patterns is not uniform or linear. 2. The relationship between modernization and fertility decline is complex. 3. Cultural values and socio-cultural frameworks play a significant role in shaping fertility outcomes.. 4. Individualism, gender roles, and access to reproductive technologies influence fertility patterns. 5. Economic indicators alone are insufficient to understand fertility behavior; broader socio-cultural.
A pathway study of factors influencing quality of fertility life	Maierhaba A. Jiang M. Thi L. Wei X. He L. Wang L.2020	Emotional distress Social support Treatment burden Personal coping strategies	Emotional well-being and social support significantly mediate the relationship between treatment quality. 2. Holistic care approaches addressing physical, emotional, and social aspects of fertility challenges 3. Clinical practice and patient support systems should prioritize emotional and social support for in treatment.
Identify affecting factors on total fertility rate: A systematic review	Borzoiepour 8. Alizadeh G. Jafary H. Khodayari-Larnaq.2024	Access to reproductive health services Government policies Urbanization Cultural norms Social factors Economic factors Health-related factors	1.Fertility decisions are shaped by both individual choices and broader structural conditions. 2. The interplay between various factors (social, economic, cultural, political, and health-related) into outcomes. 3. Addressing women's education, employment, and access to reproductive health services can imp
Environmental factors affecting female fertility	Sakali A-K, Bargiota A, Bjekic-Macut J, Macut D, Mastorakos G, Papagianni M 2024	Temperature Climate Radiation Air pollutant	1.Exposure to environmental factors and EDCs can lead to adverse fertility effects, including: - Decreased fertility -Increased risk of miscarriage - Reproductive problems 2. EDCs can interfere with the body's endocrine system, disrupting reproductive cycles and fertility. 3. Recognizing and limiting exposure to environmental hazards, including EDCs, is crucial for improve 4. Further research is needed to fully understand the impact of environmental factors and EDCs on 5. Identifying and mitigating environmental hazards can help improve female fertility and protect the health of future generation.
University student's fertility awareness and it's influencing factors	Ren Y, Xie Y, Xu Q, Long M, Zheng Y, Li L, Niu C.2023	Field of study (medical vs. non-medical) Gender (female medical students had higher awareness) Possibly age and years of education (though association was unclear)	1.University students' fertility awareness is generally low to moderate. 2. Female medical students have higher levels of fertility awareness compared to other groups. 3. Male and non-medical students are particularly in need of fertility awareness interventions. 4. Fertility awareness is an important aspect of reproductive health. 5. Educating young people about fertility and reproductive health is crucial for informed decision-making.

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Influencing factors of fertility in developing countries	Rahman A, Islam MA, Yeasmin S.2020	Women's age Women's education Partner's education Age at first marriage Per-capita health expenditure	1.Women's age is the most significant factor influencing fertility rates, with older women less likely 2. Higher education levels for both women and their partners are associated with lower fertility rate 3. Women who marry at an older age are less likely to have high fertility rates. 4. Increased per-capita health expenditure is associated with a decline in fertility rates. 5. Policies aimed at increasing education and healthcare access, particularly for women, may be effective in reducing fertility rates in developing countries.
The analysis of fertility quality of life and influencing factors of patients with 5 repeated implantation failure.	Ni Y. Tong C. Huang L. Zhou W. Zhang A 2021.	Residence Financial difficulties Male infertility Body Mass Index (BMI)	1.Fertility Qol score of RIF patients was moderate (60.44). 2. Financial difficulties, higher BMI, and depression were associated with lower fertility Qol scores. 3. Strong family social support was associated with higher fertility Qol scores. 4. Addressing psychological status of RIF patients is crucial for improving their QoL. 5. Interventions such as building family and social support, creating a good medical environment, and education can improve fertility QoL.

METHODOLOGY

This research was conducted as a narrative literature review to explore the impact of modern lifestyle factors on fertility among young women. A total of 16 peer-reviewed articles. Were analyzed, each examining the effects of modern lifestyle factors such as diet, physical activity, stress, and exposure to environmental pollutants on fertility in women of reproductive age. A comprehensive search was performed using electronic databases including PubMed. Google Scholar, and Science Direct. Studies were included if they were published in English. Peer-reviewed. Peer-reviewed articles: Only articles published in peer-reviewed journals were included. English language: Only studies focusing on women of reproductive age (18-45 years) were included. Only studies examining the impact of modern lifestyle factors on fertility were included. Each selected study was independently reviewed for relevance. Methodological quality, and reported outcomes. Key data extracted included study design, sample size, population characteristics, modern lifestyle factors examined, and results related to fertility outcomes.Due to the variation in study designs and outcome measures, a qualitative synthesis approach was used to identify patterns and common themes. Subgroup analyses, such as comparing women with different lifestyle habits, were incorporated where possible to better understand the differential effects of modern lifestyle factors on fertility across various population groups. The primary aim of this study was to evaluate how modern lifestyle factors influence fertility among young women. The article has been drafted following the TAILMRDCR model proposed by Kumar.

RESULT

lifestyle factors significantly influence reproductive health. Poor diet, obesity, chronic stress, lack of exercise, and exposure to harmful substances such as tobacco, alcohol, and endocrine-disrupting chemicals (EDCs) negatively impact hormonal balance, ovulation, and sperm quality. Conditions like PCOS and infertility are closely linked to modern sedentary lifestyles and high consumption of processed foods. Studies have shown that a healthy lifestyle—including a balanced diet (such as the Mediterranean diet), regular moderate exercise, and effective stress management—can enhance fertility outcomes by improving metabolic function, hormonal regulation, and reproductive efficiency. Moreover, smoking and excessive alcohol intake are known to reduce fertility in both men and women, while EDCs found in plastics, cosmetics, and pollutants disrupt endocrine functions essential for reproduction. Socioeconomic pressures, delayed parenthood, and environmental pollutants further contribute to declining fertility rates worldwide. Therefore, promoting healthy habits and addressing environmental and social challenges through policy and public health interventions is essential to preserve fertility and improve overall well-being

DISCUSSION

The decline in global fertility rates is a multifaceted issue that warrants serious attention due to its profound implications on population dynamics, economic stability, and societal development. The article justifiably highlights a combination of socio-economic, environmental, and lifestyle factors that contribute to this trend, such as increased prosperity, delayed family planning due to women's educational and career aspirations, and shifting personal priorities. Furthermore, emerging concerns related to reproductive health—including the rise in testicular cancer, declining semen quality, and exposure to endocrine-disrupting chemicals—underscore the urgent need for environmental and public health interventions. The emphasis on low fertility awareness, particularly among university students, is especially critical, as informed reproductive choices depend heavily on education and awareness. The article's focus on the interrelation between psychological well-being, social support, financial status, and medical factors like BMI and male infertility, further justifies the need for a holistic approach. Promoting healthy lifestyle changes, improving fertility education, and implementing supportive policies are essential strategies to mitigate fertility decline and enhance individuals' fertility-related quality of life.

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CONCLUSION

The proposed conclusion is well-justified as it addresses the urgent global issue of declining fertility rates through a comprehensive and multifactorial lens. It rightly acknowledges the diverse causes behind this trend, including socio-economic changes such as increased prosperity and women's education, along with lifestyle and environmental influences like exposure to endocrine-disrupting chemicals, poor nutrition, physical inactivity, and stress. The emphasis on the low level of fertility awareness, especially among young populations, supports the need for targeted educational initiatives. The conclusion advocates for a holistic response involving lifestyle changes, policy development, and societal engagement, all of which are critical to reversing current fertility trends. By promoting healthy habits and implementing evidence-based interventions, individuals are empowered to improve their reproductive health, while governments and communities are encouraged to take active roles in supporting these efforts. Moreover, the call for research and collaboration among stakeholders ensures that strategies remain relevant, inclusive, and sustainable. This approach not only addresses the biological and health-related aspects of fertility but also considers the broader social and structural factors influencing reproductive outcomes, making the content both valid and necessary.

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