

## Original Research Article

**EVALUATING THE IMPACT OF AGE ON FERTILITY RATES: A CROSS-SECTIONAL STUDY**Shekhar Shashikant Amale<sup>1</sup>, Anjali Bhirud<sup>2</sup><sup>1</sup>Associate Professor, Department of obstetrics and Gynaecology, Dr Ulhas Patil Medical College Jalgaon, India.<sup>2</sup>Professor, Department of obstetrics and Gynaecology, Dr Ulhas Patil Medical College Jalgaon, India.*Received Date: 12/01/2024**Acceptance Date: 19/02/2024***Corresponding Author:** Dr Shekhar Amale, Associate Professor, Department of obstetrics and Gynaecology, Dr Ulhas Patil Medical College Jalgaon, India.**Email:** [drshekharamale@gmail.com](mailto:drshekharamale@gmail.com)**Abstract**

**Background:** Understanding the impact of age on fertility is crucial for reproductive health management. This study aims to provide a detailed analysis of how fertility rates are influenced by age. **Methods:** In this cross-sectional study, we evaluated a sample of 200 individuals from various age groups. The sample was chosen to represent a broad spectrum of reproductive ages. Data on fertility rates were collected through surveys and medical records, ensuring a comprehensive data set. Statistical analysis was conducted to identify patterns and correlations between age and fertility rates. **Results:** The findings revealed a clear trend of declining fertility with advancing age. The most significant decline in fertility rates was observed in individuals aged over 35 years. Statistical analysis indicated that these trends were significant, highlighting age as a key factor in fertility. **Conclusion:** This study confirms the significant impact of age on fertility rates. It highlights the importance of considering age in reproductive planning and healthcare. Further research is recommended to explore the underlying biological mechanisms and to extend these findings to a larger population.

**Keywords:** Age-Related Fertility, Cross-Sectional Study, Reproductive Health.**Introduction**

Fertility and age have a well-documented relationship, impacting individuals and couples worldwide. With societal shifts leading to later childbearing ages, understanding this relationship is more pertinent than ever. This study focuses on evaluating the impact of age on fertility rates using a cross-sectional approach.

The correlation between advancing age and reduced fertility has been a subject of extensive research. It is widely recognized that fertility rates decrease with age, particularly for women after the age of 35.<sup>[1]</sup> This decline is attributed to a decrease in the quantity and quality of ova, along with other factors like increased risk of medical conditions that can affect fertility.<sup>[2]</sup>

In men, while the decline in fertility is less pronounced, there is evidence suggesting that age can affect semen quality and thus, indirectly, fertility rates.<sup>[3]</sup> Furthermore, the age of the male partner has been increasingly recognized as an important factor in couple fertility.<sup>[4]</sup>

**Aim:** To evaluate the impact of age on fertility rates in a diverse population through a cross-sectional study.

**Objectives:**

1. To analyze fertility trends across different age groups within the sample of 200 individuals.
2. To identify and quantify the statistical significance of age-related changes in fertility rates.
3. To provide insights into the implications of age on fertility for healthcare planning and individual reproductive decisions.

**Material and Methodology**

**Source of Data:** The primary source of data for this study is derived from two key areas: (1) medical records obtained from partnering reproductive health clinics, providing detailed information on fertility rates, age, and other relevant demographic data, and (2) self-reported surveys from participants, which include questions about lifestyle, health history, and reproductive intentions and outcomes.

**Study Design:** This is a cross-sectional study designed to evaluate the impact of age on fertility rates. The study's approach involves analyzing data collected at a single point in time to identify patterns and correlations between age and fertility rates.

**Sample Size:** The study includes a sample of 200 individuals. This size is chosen to ensure a balance between statistical power and feasibility, allowing for a representative distribution across different age groups.

**Inclusion Criteria**

1. Individuals aged 18 years and above.
2. Those who have actively tried to conceive in the past or are currently trying.
3. Participants willing to provide access to their medical records and to complete the study survey.

**Exclusion Criteria**

1. Individuals with known genetic fertility disorders.
2. Those who have not attempted conception.
3. Participants unwilling or unable to provide informed consent or complete necessary data collection.

**Study Methodology:** Participants are first identified and recruited from partnering clinics. Data collection involves retrieving relevant data from medical records and administering surveys. The study ensures privacy and confidentiality in handling participant data.

**Statistical Methods:** The study employs a range of statistical methods, including descriptive statistics to outline basic features of the data, and inferential statistics, such as chi-square tests and logistic regression, to examine the relationship between age and fertility rates. These methods will help in determining the strength and significance of the observed patterns.

**Data Collection**

1. **Medical Records:** Key fertility indicators like sperm count, ovulation patterns, and history of pregnancies and births are collected.
2. **Surveys:** Self-reported data on lifestyle factors, health history, and reproductive outcomes are gathered. The survey also includes demographic information such as age, gender, and socioeconomic status.

## Observation and Results

**Table 1: Age-Related Fertility Trends and Statistical Analysis in a Sample of 200 Participants**

Age Group	Number of Participants (n=200)	Percentage (%)	Fertility Rate (%)	Odds Ratio (OR)	95% Confidence Interval (CI)	P-Value
<25	67	33.5%	70	1.00 (Reference)	-	-
25-34	41	20.5%	60	0.71	0.35-1.45	0.20
35-44	54	27%	45	0.39	0.19-0.81	0.05
>44	38	19%	30	0.21	0.10-0.44	0.001
<b>Total</b>	<b>200</b>	<b>100%</b>				

Table 1 presents age-related fertility trends and the corresponding statistical analysis based on a sample of 200 participants. The table is divided into four age groups (<25, 25-34, 35-44, and >44), with information on the number of participants, their percentage within the sample, fertility rates, odds ratios (with reference to the <25 age group), 95% confidence intervals (CI), and p-values. The data reveals a clear pattern of decreasing fertility rates with increasing age, as evidenced by the declining odds ratios and statistical significance, particularly in the >44 age group. This table provides valuable insights into how age impacts fertility and serves as a basis for understanding the implications of age on reproductive decisions and healthcare planning.

## Discussion

Table 1 presents a comprehensive analysis of age-related fertility trends based on a sample of 200 participants. The data shows a clear decline in fertility rates with advancing age, which is consistent with findings from several other studies in the field of reproductive health. Studies conducted by Zhang Y *et al.*(2022)<sup>[5]</sup> and Sserwanja Q *et al.*(2022)<sup>[6]</sup> have reported similar trends, highlighting the significance of age as a critical factor in fertility. Furthermore, Deng YL *et al.*(2022)<sup>[7]</sup> has discussed the impact of aging on fertility in both men and women, emphasizing the importance of considering age-related changes when planning for reproduction. The results in Table 1 corroborate these existing studies, emphasizing the decreasing odds of conception as individuals age, particularly beyond the age of 35. Ulubay M *et al.*(2022)<sup>[8]</sup>

## Conclusion

In this cross-sectional study aimed at evaluating the impact of age on fertility rates, we have uncovered valuable insights into the intricate relationship between age and reproductive outcomes. The findings of this research affirm the well-established understanding that age significantly influences fertility. As individuals advance in age, there is a noticeable decline in fertility rates, with a particularly pronounced decrease observed after the age of 35. This decline in fertility rates is substantiated by the statistical analysis, which reveals decreasing odds of conception as age increases.

These results have several implications for both healthcare planning and individual reproductive decisions. Healthcare providers can utilize this information to counsel individuals and couples effectively, emphasizing the importance of considering age as a critical factor when planning for family-building. Additionally, these findings underscore the need for age-specific reproductive health strategies to address the unique challenges and considerations that different age groups may face.

While this study provides valuable insights, it is essential to acknowledge its limitations, including the sample size and the cross-sectional design. Future research should explore this age-fertility relationship in larger and more diverse populations, possibly using longitudinal approaches to capture changes over time.

In conclusion, this study adds to the body of knowledge surrounding age-related fertility trends, reaffirming the significance of age as a crucial determinant in fertility rates. The insights gained from this research can guide healthcare practitioners and individuals alike in making informed decisions about family planning and reproductive health.

### Limitations of Study

- 1. Sample Size:** One of the primary limitations of this study is the relatively small sample size of 200 participants. While the sample was carefully selected to represent various age groups, the generalizability of the findings to larger and more diverse populations may be limited. Larger sample sizes would provide more robust and generalizable results.
- 2. Cross-Sectional Design:** The study's cross-sectional design captures data at a single point in time, limiting the ability to infer causality or observe changes in fertility rates over time. Longitudinal studies that track individuals' fertility experiences over several years would provide a more comprehensive understanding of age-related changes in fertility.
- 3. Selection Bias:** The participants in this study were recruited from specific healthcare clinics, which may introduce selection bias. Those seeking reproductive healthcare may not represent the broader population, potentially affecting the generalizability of the findings.
- 4. Self-Reported Data:** The study relies partially on self-reported survey data, which can be subject to recall bias and social desirability bias. Participants may not accurately recall or report their reproductive experiences, leading to potential inaccuracies in the fertility rate data.
- 5. Limited Age Groups:** The age groups used in the study may not capture all the nuances of age-related fertility changes. More granular age categories or additional data points for specific age ranges could provide a more detailed analysis of the age-fertility relationship.
- 6. External Factors:** The study did not extensively consider external factors that may influence fertility, such as lifestyle, diet, and environmental factors. These factors can significantly impact fertility rates and were not comprehensively addressed in this research.
- 7. Single Geographic Region:** The study's data was collected from a single geographic region, which may not account for regional variations in age-related fertility trends. Reproductive health can be influenced by cultural, socioeconomic, and environmental factors that differ across regions.
- 8. Limited Socioeconomic Diversity:** The study did not adequately consider the socioeconomic diversity of the participants. Socioeconomic status can impact fertility decisions and outcomes, and a more diverse sample would provide a better understanding of these effects.
- 9. Male Fertility:** The study primarily focused on female fertility, and while it briefly considered male partners, a more comprehensive examination of male fertility and its interaction with female fertility could provide a more holistic view.

**10. Temporal Factors:** The study did not account for potential temporal changes in fertility trends over the years. Fertility rates can be influenced by societal changes, medical advancements, and cultural shifts, which were not explored in detail.

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