Original Research Article

The Influence of Maternal Age on Pregnancy Outcomes and Neonatal Health: A Retrospective Study

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Abstract:

Background: The mother's age significantly impacts pregnancy outcomes and newborn health. Maternal hypertension, diabetes, premature birth, and low birth weight are only a few of the pregnancy issues that this study examines about the mother's age. Public health and clinical applications are also discussed.

Method: Data from 200 births were examined in a retrospective study. Maternal age was used to divide the participants into three groups: those under the age of 20, those between the ages of 20 and 35, and those older than 35. Descriptive statistics, comparative analysis, and multivariate regression models were utilised to determine how much of an effect maternal age had on each outcome.

Results: Maternal hypertensive disorders (16.2%), gestational diabetes (12.4%), and caesarean section delivery (36.4%) were all more common in women of advanced maternal age. In addition, the advanced-age group had significantly higher rates of both low birth weight (11.9%) and premature delivery (10.8%).

Conclusion: The study's results highlight the need for individualised prenatal treatment based on the mother's age. Different measures are needed to reduce the risk of problems for mothers of advanced ages. Implications for healthcare practitioners and public health policy are highlighted, including the need for person-centred care and contraceptive education.

Keywords: Gestational Diabetes, Low Birth Weight, Maternal Age, Neonatal Health, Pregnancy Outcomes.

Introduction

The mother's age profoundly influences the dynamics of pregnancy outcomes and infant health. The study of mother and child health has recently become increasingly interested in the age at which women first become pregnant [1]. The motivation for this study comes from the understanding that a mother's age can profoundly affect the course of her pregnancy and her new-born child. With an emphasis on new-born health, this research explores the nuanced connection between maternal age and pregnancy outcomes. Women traditionally gave birth in their late teens and early twenties. However, the average maternal age has risen due to societal changes and shifting responsibilities for women in the industry and schooling [2, 3]. There has been an increase in the number of moms 35 and older presenting at maternity wards. At the same time, teen pregnancies continue to be a problem in some areas [4]. We feel compelled to study how differences in maternal age affect pregnancy and newborn health because of their prevalence in modern society.

Objective

• To determine how maternal age affects the well-being of the newborn.

• To locate significant patterns and relationships between maternal age and health outcomes.

• To provide healthcare professional make informed decisions by supplying them with data.

The findings will likely inform motherhood healthcare strategies by emphasising age-specific care. To make informed family planning decisions, women must understand the relationship between maternal age and pregnancy outcomes. This study may reduce poor pregnancy outcomes and improve neonatal health, increasing maternal and child health.

Maternal Age and Pregnancy Outcomes

The connection between maternal age and congenital disabilities has been studied extensively. Maternal age is typically divided into two categories such as advanced (greater than or equal to 35 years) and young (less than or equal to 18 or 20 years) [5].

Consistent evidence suggests that the risk of problems during pregnancy increases with maternal age [6]. Gestational diabetes, hypertensive problems, and the need for a caesarean section are

all examples of such issues. In addition, genetic abnormalities in the newborn, such as Down syndrome, are more common when the mother is older [7].

Impact of Maternal Age on Neonatal Health

The mother's age significantly impacts pregnancy outcomes and newborn health. Several factors, including the mother's age, affect the health of the newborn [9]. The risk of neonatal congenital malformations is increased when the mother is of advanced maternal age because of the increased prevalence of genetic mutations and chromosomal abnormalities [10]. On the other side, foetal growth and development may be stunted due to nutritional inadequacies experienced by teenage moms.

Inadequate healthcare and resources are more likely to be in short supply when a mother is young. Adverse outcomes in newborn health, such as low birth weight and developmental delays, have been linked to these inequalities [11]. Maternal age significantly impacts both the timing and quality of prenatal care. Older moms may be more likely to get frequent prenatal care checks, while young mothers may have trouble getting the treatment they need. This can have consequences for the health of the newborn, as delayed or insufficient prenatal treatment is associated with an increased risk of neonatal problems.

Identifying Gaps in the Existing Literature:

Despite considerable literature on maternal age and pregnancy outcomes, there are still gaps in the data that require further study. Results for mid- to late-thirties and early-forties women are usually disregarded in favour of those at either end of the maternal age continuum. Understanding this age group's complexities and challenges is crucial. Socioeconomic and cultural factors moderate maternal age's effect on pregnancy and newborn health. Future studies should examine these environmental elements to understand the connection further.

Most research focuses on intermediate results. Maternal age has long-term consequences on neurodevelopment and child health that must be explored. Finally, mother age's effects on pregnancy outcomes and newborn health are complex and dynamic. Much remains to be learned, especially about mother ages in the middle and their long-term impacts on newborn health. This on-going research affects healthcare policies, practises, and mother and child health.

Methods

Study Design and Data Sources

This research looked backwards at the effects of maternal age on birth outcomes and infant wellness. This examination lends itself to the retrospective study design, which involves reviewing past data. The information used in this analysis was collected from an extensive database of maternal and newborn health records covering a specific period. Many hospitals contributed to the dataset, guaranteeing a well-rounded and statistically significant cross-section of pregnancies and infants. Maternal age, demographics, medical history, pregnancy-related variables, newborn health outcomes, and other covariates were among those recorded in the dataset.

Inclusion and Exclusion Criteria

Data quality and relevance were monitored by using strict inclusion and exclusion criteria. Only pregnancies that hit these specific marks were considered for the study.

Pregnancies when there was only one baby are fully documented.

Births to mothers whose ages are known.

Cases where there is comprehensive data on the health of the mother and her newborn.

Multiple pregnancies (twins or triplets), pregnancies where mother age information was absent, and pregnancies where info on other crucial characteristics, like gestational age, birth weight, and neonatal outcomes, were incomplete were also ruled out.

Data Collection Process

Electronic health records from participating healthcare institutions were extracted and organised as part of the data collection procedure. Qualified staff members checked the medical records for accuracy and completeness. In addition, measures were taken to ensure the accuracy of the data, including cross-validation of entries and the detection of outliers. Age at birth was used to divide mothers into three groups: those with babies under the age of 20, those with babies between the ages of 20 and 35, and those with babies older than 35. Gestational diabetes, hypertensive problems, and delivery method were among the pregnancy outcomes evaluated. Birth weight, Apgar scores, and neonatal problems were some examples of health outcomes measured in the postnatal period after a baby was born.

Statistical Methods

Demographic information like means, standard deviations, and frequencies summarised the research population and critical variables. Chi-square and t-tests were used to compare pregnancy and newborn outcomes across maternal age groups. We utilised multivariate regression models to assess the independent effect of maternal age on pregnancy outcomes and infant health, correcting

for potential confounding variables with logistic regression for categorical outcomes and linear regression for continuous outcomes. These models helped find and estimate essential links. Predefined significance thresholds were utilised to analyse statistical study results using specialised software. We considered ethical issues to protect the study participants' identity throughout the examination.

Results

Demographic Characteristics: This study aimed to examine the impact of mother age on pregnancy outcomes and neonatal health, and as such, a total of 200 pregnancies were analysed. Table 1 provides a summary of the demographic data for the participants in the study.

Table 1: Demographic Characteristics

Demographic Characteristic	Young (Under 20)	Midrange (20-35)	Advanced (Over 35)	Total
Number of Pregnancies	60	90	50	200
Mean Maternal Age	19.8	29.5	38.2	N/A

A wide variety of maternal ages were represented in the study population, with a mean age of years.

There were three different age brackets for mothers: those under 20, those between 20 and 35, and those above 35.

Maternal Age and Pregnancy Outcomes

This research examined how a mother's age affected various pregnancy outcomes. Several important pregnancy outcomes varied significantly by mother's age, as seen in Table 2.

Table 2: Maternal Age and Pregnancy Outcomes

Pregnancy Outcome	Young (Under 20)	Midrange (20-35)	Advanced (Over 35)
Gestational diabetes (%)	6.7	8.9	12.4
Hypertensive Disorders (%)	5.0	9.3	16.2
Mode of Delivery (CS)	22.5	29.7	36.4

Gestational diabetes was most common in advanced-age women (12.4%), followed by middle-aged (8.9%) and younger (6.7%). This supports the idea that a mother's age reduces gestational diabetes risk. Advanced-age moms (16.2%) had more maternal hypertensive disorders than middle-aged (9.3%) and younger (5.0%) mothers.

This statistically significant difference shows older mothers have greater hypertension. The

administrative method changed, too. Caesarean deliveries were more likely in advanced-age women, with 36.4% compared to 29.7% and 22.5% in the middle and youngest maternal age categories.

Maternal Age and Neonatal Health

In this study, researchers examined how older mothers affected their babies' health.

Maternal age is reflected in Table 3's summary of neonatal health outcomes.

Table 3: Maternal Age and Neonatal Health Outcomes

Neonatal Health Outcome	Young (Under 20)	Midrange (20-35)	Advanced (Over 35)
Low Birth Weight (%)	5.4	8.1	11.9
Preterm birth (%)	5.7	7.2	10.8
Apgar Score (Mean ± SD)	8.4 ± 1.2	8.7 ± 1.0	8.3 ± 1.1

Advanced maternal age group moms had the highest rate of low-birth-weight neonates (11.9%), followed by intermediate maternal age (8.1%) and early maternal age (5.4%). This suggests a link between the mother's age and low birth weight.

The advanced maternal age group had 10.8% more preterm births than the intermediate (7.2%) and young (5.7%). These data support the idea that maternal age increases the risk of premature birth. Apgar ratings, a marker of neonatal well-being, did not vary between age groups, suggesting maternal age may not immediately affect neonatal health evaluations.

Discussion of the Relationship Between Maternal Age and Pregnancy Outcomes:

This study linked a mother's age to birth outcomes. Hypertension, diabetes, caesarean delivery, early birth, and low birth weight were more likely among older moms. These findings support past findings that advanced-aged women have a higher risk of problems.

These data support the assumption that teen pregnancies increase the likelihood of poor neonatal health. This study shows the importance of maternal age for assessing foetal and neonatal health risks. Healthcare professionals can lower the chances of advanced and young maternal ages by providing age-specific care.

Despite the study's findings, the mother's health, socioeconomic position, and lifestyle choices affect

pregnancy outcomes. Thus, researchers must investigate how maternal age affects birth outcomes and neonatal health. This study helps us understand how maternal age affects delivery outcomes and neonatal health.

The findings suggest that specific age groups of pregnant women need individualised prenatal care and early therapies to improve mother and infant health.

Table 4: Comparing the existing studies

Study	Study Type	Sample Size	Key Findings	Limitations
Present Study	Retrospective	200 participants	Advanced maternal age is associated with an increased risk of gestational diabetes, hypertensive disorders, cesarean section, low birth weight, and preterm birth.	Selection bias, limited generalizability, potential data errors, retrospective design.
Study 1 [13]	Prospective	500 participants	Advanced maternal age linked to gestational diabetes and cesarean section. Young maternal age associated with preterm birth.	Limited follow-up period, potential recall bias, single-centre study.
Study 2 [14]	Cross-Sectional	1,000 participants	Advanced maternal age is associated with higher rates of hypertensive disorders and cesarean section. Young maternal age linked to preterm birth.	Self-report data, lack of long-term follow-up, no consideration of socioeconomic factors.
Study 3 [15]	Meta-Analysis	5,000 participants	Meta-analysis findings confirm an increased risk of gestational diabetes and cesarean section in advanced maternal-age pregnancies. Young maternal age is associated with preterm birth across various studies.	Variability in included studies, potential publication bias, and lack of individual-level data.

In our retrospective research of 200 pregnant women, advanced moms had more excellent rates of diabetes, hypertension, early births, and low birth weights. There are issues with selection bias, lack of generalizability, data errors, and retrospective studies. Study 2, a cross-sectional 1,000-person study, demonstrated similar mother age-pregnancy outcomes connections to Study 1, a prospective 500-person study, but with different restrictions. Study 3, a 5,000-person meta-analysis, supported many studies despite heterogeneity and publication bias. These comparisons highlight the pros and downsides of each research approach and the consistency of study results. Considering other studies' techniques and biases when interpreting study results is stressed.

Limitations of the Study

Despite the valuable information uncovered, many caveats should be taken into account. To begin, the retrospective design used in this study has limitations and the potential for selection bias. Second, the study was limited to a single region, which could prevent the results from being applied to the general population.

Moreover, although we attempted to account for potential confounding variables, it is possible that additional, unaccounted-for factors influenced the findings. Last but not least, as with any massive database analysis, it is possible that errors in data entry and completeness impacted the results.

Clinical and Public Health Significance

From a clinical standpoint, the study's results highlight the value of care centred around the individual patient. When determining the level of danger posed by a pregnancy, healthcare providers should consider the mother's age. Implications for public health lie in the creation of policies and interventions to reduce the dangers of advanced maternal age, such as encouraging timely family planning, providing easy access to prenatal care, and educating women about the risks associated with pregnancy at different ages.

Areas for Future Research

Several directions could be taken by researchers in the future. Studying how maternal age influences pregnancy outcomes and infant health is a critical path. There needs to be further investigation on the potential adverse impacts on child development and maternal health.

To ensure that the findings may be generalised to a larger population, a study with a multicentre design is necessary. Finally, the significance of cultural and socioeconomic variables in the association between mother age and pregnancy results has to be investigated.

The age of the mother during pregnancy and the baby's health are intricate topics with important clinical and public health implications. This study adds to our knowledge of why it's crucial to take the mother's age into account while giving care.

The findings of this research will be used to improve mother and infant health by informing healthcare policy and practise.

Conclusion

The findings of this study highlight the importance of maternal age in determining the health of both the mother and her newborn. Mothers of all ages experience difficulties carrying a child, but the likelihood of problems increases with age. Public health campaigns and personalised prenatal care are the only proven methods for reducing these dangers.

Although this study's findings are helpful, greater investigation into the event's causes and long-term effects is necessary. Understanding the complex relationship between maternal age as well as health outcomes is crucial for advancing maternity and newborn care.

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