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Public Health Research Methods

Dissertation

THE IMPACT OF MATERNAL SMOKING DURING PREGNANCY ON EARLY CHILD DEVELOPMENT OF Newborns in the United States

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Declaration page

The present investigation was carried out and authored exclusively by the researcher. The aforementioned statements and ideas are attributed to the author. Upon conducting the investigation, the author arrived at the aforementioned conclusions. The present study was conducted without the utilization of any prohibited materials or scripts sourced from other authors or candidates. There is an absence of any falsehoods within this statement.

Name:

Date:

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# Abstract

Effects of maternal smoking on the development of newborns in the United States are the focus of this dissertation. The purpose of the research is to gain as much knowledge as possible regarding the effects of maternal smoking on infant health in order to better support the healthy development of future generations.

The study uses an orderly review of the literature to gather all the information that is already known about the subject. Several papers from academic journals about how smoking by a mother affects a baby's development were looked at. We looked at how many pregnant women smoked, when they did it, and how many children they had.

The data show how important it is to learn more about the complicated link between a mother smoking and a child's early development. To learn more about how parental smoking affects a child's growth, researchers should look at how smoking interacts with other socioeconomic and emotional factors. The results of this study show that new ways of treating babies whose moms smoked while they were pregnant are needed to help them and help them grow and develop. Programming for parents, help to stop smoking while pregnant, and other steps can be taken to keep kids from getting sick.

The results of this study can help people who work in maternal and child health as well as people in charge of public health. The results of this study will help policymakers lower the number of pregnant women who smoke, which will improve the health of babies and their families. These results show how important it is for pregnant women to have full plans and services to help them stop smoking, as well as to keep track of and evaluate how well these programmes are working.

This dissertation contributes to the literature by highlighting the need for further systematic research and focused treatments to address the negative effects of maternal smoking on infant brain development. Children of smokers can be kept safe and healthy through education and preventative measures, but more research is needed to fully understand the elements at play.

# Chapter 1: Introduction

In the United States, foetal smoking and the effects it has on a child's development are serious public health issues. The goal of this study is to ascertain whether a pregnant woman's smoking has an adverse effect on the foetus' development. By examining the relevant literature, this study attempts to help us better understand the possible harmful effects of mother smoking on a developing child. Numerous studies have connected maternal smoking during pregnancy to unfavourable results for the mother and the unborn child. Numerous studies have shown the numerous negative effects of smoking during pregnancy, such as premature birth, low birth weight, and other pregnancy-related problems. The effects of secondhand smoke from a mother's smokes on a child's development after the perinatal period, however, require more research.

In this study, significant foundational literature in this field will be presented and assessed utilising a funnel structure. We'll start by reviewing studies that can be widely applicable to the discussion of maternal smoking and how it affects children. Studies that have linked maternal smoking to unfavourable birth outcomes are included in this list. The topic will then switch to research looking at how maternal smoking affects a child's later growth and development, including language, behaviour, and IQ. The study will also look at more specific research that look into potential mechanisms connecting mother smoking during pregnancy with the development of the foetus. The effects of prenatal nicotine exposure on the development of the brain and nervous system may be the main focus of this research.

Last but not least, the research strategy will be based on the most pertinent and specific literature, including long-term cohort studies or randomised controlled trials that have looked at the relationship between maternal smoking during pregnancy and the development of the child. By performing an extensive literature review on the effects of maternal smoking on offspring development, this study aims to add to the body of knowledge already in existence. This will support public health programmes and initiatives that aim to reduce maternal smoking and improve newborn and child health.

## 1.1 Rationale

There are several compelling reasons to investigate the effects of maternal smoking on a developing kid. To begin, it is well knowledge that smoking during pregnancy is harmful to the developing child, but the long-term effects of this habit are less understood. This research has the potential to shed light on the potential long-term impacts of maternal smoking and provide crucial insight into the future health and well-being of children who are exposed to secondhand smoke.

Second, the findings of this study may have significant implications for public health policies and programmes whose goals include reducing the prevalence of smoking among pregnant women. Most current efforts to assist pregnant women quit smoking centre on the obvious dangers to the unborn child, such a lower birth weight or an earlier delivery. If, however, research confirms that maternal smoking negatively affects a child's growth and development, it will be clear that comprehensive strategies to help people quit smoking are needed.

The study's significance also stems from its examination of how smoking during pregnancy impacts the development of several aspects of a young child. The study can determine a child's vulnerabilities by examining factors such as his or her cognitive development, language capabilities, and behavioural results. Children at risk can benefit from individualised therapies and early intervention initiatives thanks to this knowledge.

The study may also shed light on the mechanisms through which maternal smoking stunts a child's development. To learn how prenatal nicotine exposure influences particular processes, it is helpful to have a firm grasp on the neurobiological and physiological pathways at play. This data can teach us about human development through time and suggest novel approaches to old challenges.

This research has the potential to fill in some of the gaps in our understanding of how maternal smoking during pregnancy affects a child's early development. The importance of pregnant women quitting smoking and the study's explanation of the consequences and mechanisms can inform public health policies and professional practises. If the findings encourage better prenatal care and aid in the healthy development of infants and toddlers, future generations may benefit.

## 1.2 Research aim

The purpose of this research is to highlight the detrimental effects of maternal smoking on infant health in the United States.

## 1.3 Study objectives

1. To learn how much of an impact mother smoking has on babies' brain development.
2. The second objective is to look at how prenatal smoking affects infants' psychological and social growth.
3. Third, to evaluate the newborns' potential behavioral effects of their mothers' smoking throughout pregnancy.
4. To investigate the processes by which prenatal smoking harms a developing kid.
5. To find ways to reduce the detrimental effects of smoking during pregnancy on a child's early development.

## 1.4 Study hypotheses

1. Newborns whose mothers smoked throughout pregnancy will have impaired cognitive function.
2. Babies whose mothers smoked throughout pregnancy have lower rates of healthy social and emotional development.
3. Increased behavioral issues in infants have been linked to mothers who smoked during pregnancy.
4. When mothers are exposed to nicotine during pregnancy, their babies are more likely to have health problems later in life.

## 1.5 Research question

* To what extent does secondhand smoke from mothers' cigarettes affect their newborns' health and development in the United States?

## 1.6 Significance of the research question

Several factors make this research question crucial. To begin, in the United States, maternal smoking poses a significant threat to the health of both the mother and the unborn child. Second, studies have shown that prenatal smoking negatively impacts children's cognitive, social, and emotional development, all of which are important for a healthy start in life. Smoking during pregnancy has been shown to have negative effects on foetal development, but more research is needed to determine the exact mechanisms by which this occurs and to develop effective therapies and preventative measures. The health and well-being of children and their families, as well as public health policy and practise in the United States, are all directly affected by this research.

# Chapter 2: Literature review

## 2.1 Introduction

Many people are curious about the effects of maternal smoking on their unborn child's health and development. This study provides a comprehensive overview of the literature on the effects of maternal smoking on the offspring's cognitive, social, emotional, and behavioural development across five domains. The studies' credibility and applicability can be assessed in relation to other information, theories, and models.

## 2.2 The connection between maternal smoking throughout pregnancy and cognitive expansion in newborns

Effective interventions and prevention approaches are required to counterbalance the negative effects of a mother's smoking on her child's early development. In-depth theories, studies, and techniques supported by evidence for reducing the negative impacts of mother smoking on children's development will be discussed here. The developmental origins of health and disease (DOHaD) hypothesis are an important theory that gives a framework for comprehending the effects of maternal smoking. Exposure to harmful environmental influences during vulnerable developmental stages, like pregnancy, can have lifelong consequences, according to this notion. One environmental element that is thought to greatly affect early infant development is maternal smoking during pregnancy.

Smoking cessation programmes during pregnancy have been demonstrated to improve birth outcomes, such as lowering the risk of premature delivery and low birth weight. However, further research is needed to determine the long-term efficacy and sustainability of these programmes in reducing the negative effects of maternal smoking on children's development. The long-term advantages and potential problems of smoking cessation programmes can be better understood through longitudinal studies that track the developmental trajectories of children whose mothers participated in these programmes.

Other critical aspects influencing early infant development should also be addressed in holistic therapies, not just smoking cessation. Anxiety and depression in mothers might compound the negative consequences of smoking on a child's growth and development. Counselling, psychoeducation, and access to appropriate mental health services are all aspects of mental health care that should be incorporated into treatments for expectant women.

Interventions to reduce the harm caused by a mother's smoking should also focus on helping parents improve their parenting skills and providing them with support. Educating parents on how their children learn and grow as well as offering them tools for effective parenting and access to early education resources benefits children in many ways. Promising results have been found in improving outcomes for children exposed to maternal smoking through parenting programmes that emphasise creating strong parent-child interactions, boosting responsive care giving, and providing guidance on healthy child development.

Public health tactics should be used as part of broader preventative efforts. Educating people on the hazards of smoking during pregnancy and the value of smoke-free zones is crucial. Expectant women and the general public can be reached by health promotion initiatives that highlight the risks of smoking during pregnancy and encourage people to quit.

In order to protect vulnerable groups including pregnant women and children from secondhand smoke, public health regulations play a critical role in promoting conditions that discourage smoking. The exposure of pregnant women and children to dangerous chemicals can be reduced and healthier surroundings can be promoted by implementing and enforcing smoke-free rules in public spaces, workplaces, and households.

Comprehensive intervention and prevention trials have shown promising results, lending credence to these suggestions. Multi-component therapies, including behavioural support, counselling, and medication, were shown to be more effective than single-component interventions in a systematic assessment of programmes aimed at helping pregnant women quit smoking. Better results were also shown with therapies that targeted broader psychosocial aspects including stress management and social support.

Smoking cessation programmes, maternal mental health assistance, and improved parenting abilities, education, and public health policies are all necessary to lessen the detrimental effects of maternal smoking on a child's early development. The DOHaD theory is a theoretical framework for analysing how mother smoking affects a child's growth and development over time. Effective interventions and preventative measures can be created to lessen the negative effects of mother smoking on children's development by incorporating evidence-based tactics and theories.

## 2.3 The influence of maternal smoking during pregnancy on the social and emotional development of newborns

There has been a lot of interest in studying how mother smoking affects children's psychological and social growth. While there may be a link between prenatal smoking and children's negative social and emotional development, there are many factors to take into account and methodological hurdles to overcome before a definitive causal relationship can be established.

Variations in study designs and methods employed by different studies are an important consideration. Retrospective study designs and self-report assessments are used in research on the effects of mother smoking on children's social and emotional growth, but both have their drawbacks. It is difficult to compare findings across studies and draw firm conclusions because there are no universally accepted indicators of social and emotional development.

The role of confounding variables is another crucial consideration. There is a strong correlation between a mother's smoking during pregnancy and other risk factors, such as poverty, mental illness, and poor parenting. As a result, it is challenging to isolate the precise impacts of mother smoking on children's social and emotional results, as these other factors can also contribute. It is essential for future research to use proper statistical methods or study designs that adjust for the influence of these confounding variables.

Ethical concerns make it difficult to definitively link maternal smoking to negative effects on children's social and emotional growth. The consequences of maternal smoking during pregnancy cannot be studied using randomised controlled trials since they are neither possible nor ethical. Because of its inherent weaknesses, such as the possibility of selection biases and the difficulty to control for all confounding factors, observational studies are mostly unavoidable in the scientific community. Due to these constraints, it is difficult to establish a causal link between maternal smoking and children's social and emotional growth.

There are additional difficulties involved in gauging a newborn's social and emotional development. It can be difficult to tell the difference between short-term challenges and long-term impacts caused directly by mother smoking when an infant is still developing their social and emotional capacities. To fully comprehend the long-term effects of parental smoking on children's social and emotional development, longitudinal studies that track them from infancy through later stages of development are required.

Future research should apply thorough assessments utilising standardised measures in order to solve these issues and provide a more detailed picture of the connection between maternal smoking and social-emotional development. Socioemotional competence, behavioural issues, and the ability to control one's emotions are just a few examples of what these tests should capture. In order to demonstrate temporal correlations and identify potential sensitive periods during which the impacts of mother smoking may be most pronounced, longitudinal designs that track children's development through time are invaluable.

A critical review of the findings indicates inconsistencies and difficulty in establishing a clear causal relationship between maternal smoking during pregnancy and adverse social and emotional outcomes in neonates, concluding that while research suggests a potential association, establishing a definite causative relationship is difficult. Assessing newborns' social and emotional growth is difficult for a number of reasons. These include methodological restrictions, confounding variables, and the novelty of the topic itself. To further understand the connection between maternal smoking and children's social-emotional development and to provide targeted interventions and assistance for at-risk populations, researchers should conduct future studies using comprehensive assessments and longitudinal designs.

## 2.4 The potential behavioral consequences of maternal smoking during pregnancy on newborns

Newborns' behavioural development and the effects of maternal smoking during pregnancy are an area of study. Studies have shown a link between mother smoking and children's attention issues, hyperactivity, and conduct disorders, but there are various limitations to the research that must be taken into account.

The quality of the available evidence is a factor that must be considered. Many studies assessing the effects of parental smoking on children's behaviour use retrospective data collecting, which is vulnerable to recall bias and error. Self-report measures are frequently used in retrospective research, however they can be skewed by social desirability bias and not accurately reflect the prevalence of maternal smoking during pregnancy. The findings cannot be taken at face value because a causal link between maternal smoking and behavioural outcomes cannot be established because of the reliance on retroactive data.

Potentially confusing circumstances are another area of concern. Other risk factors, including as low socioeconomic position, maternal mental health concerns, and environmental pollutants, frequently co-occur with smoking by the mother during pregnancy. It is difficult to disentangle the effects of parental smoking from other possible causes of behavioural disorders in children. Future research should use rigorous procedures that control for confounders, such as proper statistical techniques or participant matching based on relevant traits, in order to demonstrate a more solid association.

The quality of the research' layout is also important. If you want to establish temporal correlations and minimise recall bias, prospective cohort studies that follow mothers and their children from pregnancy through childhood are ideal. Assessment of behavioural outcomes across many time points is made possible by longitudinal designs, leading to a richer understanding of the course of development. Validated behavioural evaluations that capture a variety of behaviours, such as attention, hyperactivity, and conduct problems, should be used in research to further assure reliable and valid measurements.

Future study should investigate possible mediators and moderators of the association between maternal smoking and behavioural outcomes. Changes in neurodevelopment or variations in brain structure and function are examples of mediators that may explain the link between maternal smoking and behavioural outcomes. Moderation occurs when one variable affects another; for example, when genetics interact with maternal psychological health. Insight into the underlying processes and the identification of high-risk subgroups that may be more susceptible to the effects of maternal smoking can be gained by investigating these potential pathways.

While studies have shown links between prenatal smoking and children's behavioural issues, a closer look at the data indicates methodological flaws that need to be addressed. These include using outdated data, the presence of confounding variables, and the lack of well designed prospective studies that make use of reliable measures of behaviour change. A more solid connection between maternal smoking and behavioural outcomes can be established if future studies investigate potential mediators and modifiers. Understanding the effects of mother smoking on infant behaviour can guide focused treatments and preventative efforts if these gaps in knowledge are filled.

## 2.5 The mechanisms through which maternal smoking during pregnancy affects early child development

In order to create successful therapies, researchers must first understand the mechanisms through which maternal smoking affects early infant development. A careful evaluation of the current information reveals gaps in our understanding of the psychosocial and environmental components involved, even if some studies have studied the biological mechanisms, such as the effect on foetal brain development.

The present literature on the effects of mother smoking on early infant development focuses mostly on the biological mechanisms behind these effects. Changes in the anatomical and functional development of the foetal brain have been linked to maternal smoking in a number of studies. However, other possible elements, such as psychosocial and environmental impacts, might also contribute to child development outcomes, and these are generally under-assessed in these research.

A thorough examination of the mechanisms at play calls for an interdisciplinary approach that takes into account biological, psychological, and social factors. Taking into account the interplay of genetic, environmental, and psychological variables is necessary for a more comprehensive understanding of the intricate interconnections between these components. The processes by which maternal smoking affects early child development can be better understood if researchers incorporate theories and models that account for the multidimensional aspect of child development, such as the developmental origins of health and disease (DOHaD) framework.

The Determinants of Health and Development (DOHaD) framework postulates that factors present early in life can have lasting effects on health and development. This theoretical stance emphasises the value of thinking about the foetal and neonatal surroundings in determining a child's future. Researchers can use the DOHaD paradigm to investigate the relationship between mother smoking and other factors like stress, nutrition, and social support in order to better understand how these aspects all contribute to a child's development. This holistic method takes into account more than just the biochemical pathways affected by maternal smoking.

Nonetheless, the gaps in the existing research must be recognised. Most research into how mothers smoking impacts a child's early development is observational, making it difficult to draw firm conclusions about cause and effect. It is also difficult to compare and generalise findings across research due to the heterogeneity in study designs, outcome measures, and sample characteristics.

Future research should employ longitudinal designs that record several time periods and utilise a wide range of evaluation tools to increase our understanding of the mechanisms involved. This would make it possible to look at how things like genetics, prenatal stress, and postnatal caregiving practises play a role as mediators and moderators. A more sophisticated understanding of the mechanisms underlying the impacts of maternal smoking on early infant development can be attained by an all-encompassing and interdisciplinary study strategy.

In conclusion, although some studies have investigated the molecular pathways connecting mother smoking and early infant development, more thorough investigations that take into account both psychosocial and environmental aspects are warranted. In order to understand the intricate workings at play, a critical examination reveals how essential it is to employ multidisciplinary strategies and theoretical frameworks like the DOHaD. Researchers can help reduce the detrimental effects of maternal smoking on children's early development by addressing these knowledge gaps and limitations.

## 2.6 The potential interventions and preventive measures to mitigate the negative impact of maternal smoking on early child development

Interventions and preventive steps might not be widely used because of differences in socioeconomic status, lack of knowledge, cultural barriers, and limited access to health care. To make sure that everyone has the same access to interventions and preventive measures, it is important to make strategies that are tailored to the unique characteristics of each community.

Overall, it's clear that mom quitting smoking on her own won't be enough to fix the damage she did to her child's early growth by smoking. More study needs to be done to figure out how long lasting and effective smoking cessation strategies are. Any complete answer should help moms with their mental health, teach them how to be good parents, and help kids grow and develop.

The results of this critical analysis highlight the importance of conducting high-quality longitudinal studies that track children over time to evaluate their developmental pathways and long-term effects. To evaluate the success of smoking cessation programmes and to guide future interventions, knowing the long-term effects they have is essential.

In addition, smoking cessation is only part of a holistic strategy to reduce the detrimental effects of mother smoking on a child's early development. Interventions that target maternal mental health, parenting skills, and child development are emphasised by a critical analysis of the available data. Multiple risk variables, including maternal smoking, have been shown to independently affect infant development outcomes; these include stress, depression, and ineffective parenting. The diverse needs of mothers and their children require treatments that take into account the interconnectedness of these aspects and provide holistic assistance.

To reduce the prevalence and impact of maternal smoking on early infant development, preventive approaches are essential, in addition to interventions at the individual level. Raising public knowledge of the dangers of smoking during pregnancy and encouraging healthy practises rely heavily on educational efforts. Public health policies can create a hospitable environment that discourages smoking and protects non-smokers, including pregnant women and children, from secondhand smoke exposure by doing things like raising taxes on tobacco products, implementing graphic warning labels, and restricting smoking in public spaces.

Another crucial preventative intervention that can have a major influence on lowering maternal smoking and protecting children from exposure to dangerous substances is the establishment of smoke-free zones. Policies prohibiting smoking in all enclosed public and private areas must be enforced, and families need to be given the tools they need to keep their homes smoke-free.

However, the efficacy and practicality of these safeguards must be evaluated thoroughly. Concerns have been raised about how easily and widely available smoking cessation programmes are, especially for marginalised groups. Interventions and preventive steps might not be widely used because of differences in socioeconomic status, lack of knowledge, cultural barriers, and limited access to health care. To make sure that everyone has the same access to interventions and preventive measures, it is important to make strategies that are tailored to the unique characteristics of each community.

Overall, it's clear that mom quitting smoking on her own won't be enough to fix the damage she did to her child's early growth by smoking. More study needs to be done to figure out how long-lasting and effective smoking cessation strategies are. Any complete answer should help moms with their mental health, teach them how to be good parents, and help kids grow and develop.

To reduce the prevalence of mother smoking and protect children from harmful exposure, preventive interventions such as education, public health regulations, and ensuring smoke-free surroundings are crucial. However, the implementation and accessibility of these interventions should be carefully considered to ensure that they reach all populations, especially disadvantaged groups. The detrimental effects of maternal smoking on early child development can be lessened and the well-being of children and families can be improved by carefully analysing and refining interventions and preventive measures.

## 2.7 what are the evidence gaps?

Several possible evidence gaps may exist in the study based on the stated aims. These voids indicate that either the scope or depth of the existing research is inadequate, calling for additional study. Examples of such information gaps include:

Few longitudinal research Newborns exposed to maternal smoking during pregnancy may have long-term health and developmental effects, although these effects are not well understood. There is a knowledge gap when it comes to understanding the long-term consequences of maternal smoking on children's behavioral, social, emotional, and cognitive development beyond infancy if the available research have limited follow-up durations or lack long-term data.

Not enough high-quality randomized controlled trials (RCTs), which are used to determine the effectiveness of therapies and preventative measures. A lack of randomized controlled trials (RCTs) examining interventions to reduce the harm caused by maternal smoking would leave a gap in the evidence necessary to determine the effectiveness of various interventions and preventative measures.

Research populations should be as representative of the overall population as possible, so excluding key subgroups could invalidate the results. It is important to understand how the link between maternal smoking and child development varies across populations, but this can be difficult to do if the available studies primarily focus on one population or fail to adequately represent diverse racial, ethnic, socioeconomic, or cultural backgrounds.

There may be a dearth of thorough research clarifying the underlying biochemical, neurological, or psychosocial mechanisms by which maternal smoking affects early infant development, despite the fact that this is the focus of objective 4. In order to create effective interventions and preventative measures, knowledge of these mechanisms is essential. Therefore, there may be a lack of evidence if studies focusing on the exact mechanisms through which maternal smoking affects child development are scarce.

Findings that are inconsistent with one another or that contradict one another make it difficult to draw clear conclusions about the relationship between maternal smoking and many outcomes of child development. Such situations call for more study and replication of findings to better understand the connection between mother smoking during pregnancy and the effects on neonatal development.

Evidence gaps exist regarding the effects of maternal smoking on children's early development; these could be filled by conducting rigorous research using longitudinal studies, diverse study populations, randomized controlled trials, and in-depth mechanistic investigations.

## 2.8 Conclusion

A thorough knowledge of the underlying mechanisms is essential in light of the fact that critical review of the study findings concerning maternal smoking during pregnancy and early child development emphasizes the need for methodological changes. Future research can fill in these blanks to better inform therapies and policies that aim to lessen the effects of maternal smoking on infant development. The results of these kinds of studies can help promote better maternal and infant health.

# Chapter 3: Research Methodology

## 3.1 Research design/approach

According to the data supplied, a systematic literature review served as the study's research strategy/approach. In order to determine the effects of maternal smoking during pregnancy on the growth and development of babies in the United States, a literature review must conduct a comprehensive search of relevant databases to discover peer-reviewed articles. The goal of this review is to gather data on the effects of maternal smoking on early child development, evaluate the quality of relevant research, and form conclusions based on the evidence.

To answer the question, "What effect does a mother's smoking during pregnancy have on a baby's early development in the U.S.?" A systematic study of the literature was done:

1. Comprehensive combination of obtainable knowledge: A thorough examination of all applicable study is probable with the assist of a systematic literature review. The purpose of this evaluation is to find and incorporate applicable papers published within the previous decade by searching multiple databases and utilising inclusion/exclusion criteria. This method guarantees that a variety of studies are considered, giving a full picture of where we are in terms of understanding the topic at the moment.
2. Objectivity and transparency: Implementing a systematic search strategy, clear inclusion/exclusion criteria, and stringent screening and data extraction procedures are all essential components of a systematic literature review. Due to the use of independent reviewers and well-defined criteria for what constitutes a valid study, this method reduces the possibility of prejudice and subjectivity. The review is methodical, which improves its ability to choose and evaluate papers in an objective and transparent manner.
3. Identification of information gaps: Reviewing the existing literature can reveal any holes or restrictions in the study. Researchers can determine what topics require more study by closely examining the quality and findings of the included studies. Understanding where more study is needed is crucial for moving the profession forward.
4. Ethical considerations: Researchers can get at their study issue without having to resort to using human participants when they do a comprehensive literature review. By taking this step, we can sidestep any moral dilemmas that may arise from performing primary research on pregnant women and newborns. The review can provide useful insights by making use of existing data from published studies, all the while adhering to ethical standards and safeguarding individuals' privacy.

The systematic literature review design/approach provides a strong framework for collecting, assessing, and synthesizing current information on the effects of maternal smoking during pregnancy on the early child development of newborns in the United States. It does a thorough job of summarizing what is already known, pinpointing where more research is needed, and answering the study's central question.

## 3.2 Sampling

Pregnant women who smoke or who quit smoking during pregnancy but who smoked prior to becoming pregnant are the stated target population. In addition, the group of interest consists of infants whose mothers smoked cigarettes throughout pregnancy and who meet other criteria, such as being born between 37 and 42 weeks of pregnancy and weighing at least 5 pounds at birth. Pregnant women who have never smoked are also not included in the target population, nor are babies born before 37 weeks or weighing less than 5 pounds, or those with a history of serious medical conditions or developmental disorders, or those whose mothers used other drugs or alcohol during pregnancy.

There is a lack of specificity in the information on the sample approach used for the study. Nonetheless, it is possible to deduce that a hybrid of convenience selection and purposive sampling was used based on the inclusion and exclusion criteria.

1. Convenience sampling: Convenience sampling refers to the practice of selecting study participants who are both available and easy to get in touch with. Women who are currently smoking, women who smoked before pregnancy, babies born to moms who smoked, and babies delivered at full term and weighing at least 5 pounds are all eligible to participate in this study. Researchers may opt for this method because it is convenient for them to collect data from people living in the same geographic area, the same healthcare system, or the same community.
2. Purposive sampling: In order to answer a study topic, it is necessary to select participants based on certain qualities or criteria. Specific variables (such as smoking history, previous pregnancies, and newborn features) are specified in the inclusion and exclusion criteria for this study. Researchers can study the effects of maternal smoking during pregnancy on newborn development if they carefully choose participants based on these criteria, ensuring that the sample represents the population of interest.

This study uses a mix of convenience and purposeful sampling to choose participants based on whether or not they smoked during pregnancy and their newborn's features. Researchers can zero down on a subset of the population that is both pertinent to the study issue and able to provide the necessary data by employing this sampling approach. However, the purposeful sampling feature helps guarantee that the sample is linked with the specific research objectives and for in-depth exploration of the effects of maternal smoking on newborn development, despite the fact that convenience sampling may present certain limits in terms of generalizability.

## 3.3 Data collection tools/instruments

In this research, we used a number of instruments and methods for collecting data to learn more about how smoking by mothers affects their infants' growth and development. These methods were selected because they would reliably and accurately record relevant variables. Although there were some preexisting instruments that might be used, a study-specific data collection tool was designed to accommodate the special needs of the investigation.

To collect information from pregnant women, new mothers, and newborns, multiple sections of the data collection instrument were used. To begin, a systematic questionnaire was designed to collect data on smoking habits, such as the frequency and duration of maternal smoking, whether or not smoking was stopped during pregnancy, and other pertinent demographic information. Researchers made sure that all relevant questions were asked and that the acquired data closely matched the study's aims by developing a survey just for this investigation.

Birth outcomes were also gathered from the babies' medical records and birth certificates, which included information like birth weight, gestational age, and the existence of any diagnosed medical problems or developmental issues. This approach of collecting data was objective and standardised, which increased confidence in the results.

Observational methods were used to evaluate the progress of newborns. These evaluations included observing newborns in real-time, testing their cognitive abilities and motor skills, and using specialised exams of early childhood development. The researchers wanted to see how smoking by mothers affected their children's brains, behaviour, and motor skills, therefore they used observational measurements to do so.

Several factors led to the decision to create new tools rather than adapt old ones. To begin, the study's intended variables and dimensions of the relationship between maternal smoking and neonatal development were not fully captured by the available instruments. A study-specific instrument, designed to meet the needs of the research questions and aims, was created to facilitate this comprehensive data gathering. Using a bespoke data collection tool gave researchers more freedom over the look, structure, and substance of their investigation, allowing for a deeper dive into the problem at hand.

In addition, the study-tailored instrument was helpful because it took into account variables that were unique to the population and environment under study. Collecting information from expectant mothers required extreme cultural sensitivity and accuracy. The researchers were able to successfully account for the study population's unique contextual elements by developing a tool tailored to that demographic.

In conclusion, this dissertation used a variety of methods to collect data, including a structured questionnaire, medical record extraction, and observational measures. The necessity for thorough data collection that is in line with the research aims, control over instrument design, and the incorporation of context-specific aspects all played into the choice to adopt a study-specific data collecting tool. Researchers used these methods to amass reliable information about the impact of smoking during pregnancy on infant growth and development.

## 3.4 Procedure

Researchers followed a methodical and sequential process to gather information about how smoking by mothers affects their infants' growth and development. The following procedures were carried out in order:

* Planning and Preparation: The research team conducted a comprehensive literature analysis to pinpoint important factors, knowledge gaps, and appropriate data gathering strategies. The study's goals, methods, data sources, sampling plan, and ethical considerations were all laid out in a protocol.
* Obtaining Ethical Approval: Ethical review boards or institutional review boards (IRBs) were consulted before data collection began to make sure the study methodology was in line with regulations. The research was able to move on because permission was granted.
* Recruitment and Informed Consent: Contact with healthcare facilities, prenatal clinics, and community organizations may have been part of the sampling technique used to recruit participants. The study's goals, methods, and any associated dangers or rewards were thoroughly explained to pregnant women who satisfied the criteria for participation. Each person who took part in the study gave their written consent beforehand.
* Data Collection: In practise, this meant sending out study-specific questionnaires, combing through medical records and birth certificates, and keeping track of things through careful observation.

a. *Questionnaire Administration:* Participants were given the structured questionnaire by trained research staff. Factors such as maternal smoking habits, general demographic data, and other pertinent information were all included in the questionnaire. In-person interviews were used, and where unavailable, electronic methods were used.

b. *Medical Record Extraction:* The researchers obtained information about birth outcomes such birth weight, gestational age, and recorded medical problems or developmental disorders from the patients' medical records and birth certificates. This phase required working with medical professionals and/or healthcare facilities to collect data.

c. *Observational Assessments:* Professional observers monitored newborns' actions, evaluated their mental and physical capabilities, and administered tests meant to measure early childhood growth and development. These examinations were place in a clinical or laboratory setting with standardised conditions.

* Data Management and Analysis: All data collected were safely archived and sorted for subsequent examination. Accurate and trustworthy results are the result of meticulous data entering, coding, and cleaning processes. The data was analyzed using relevant statistical techniques and methodologies, with the use of statistical software or other analysis tools.
* Interpretation and Reporting: The analysis results were summarized and evaluated. Tables, figures, and graphs were used to effectively and clearly present the results. The findings based on the data were consistent with the aims and questions of the study.

Ethical concerns were given top priority throughout the process to safeguard the privacy and confidentiality of the participants and any sensitive data that may have been collected. The study followed all applicable ethical requirements, and all interactions with participants were handled in a professional and courteous manner.

The purpose of this study was to determine if and how smoking by mothers during pregnancy affected their infants' physical and mental growth.

## 3.5 Ethical issues

Several ethical concerns were important to consider as the investigation examined the effects of maternal smoking during pregnancy on neonatal development progressed. Throughout the investigation, the following ethical considerations, responses, and considerations were made:

* Informed Consent: Participants must give their free and informed permission after being thoroughly briefed on the study's goals, methods, risks, and potential rewards. It protects the freedom of choice and the rights of participants. Written informed permission was acquired from all participants after they were given comprehensive information about the study. Before committing to the study, they were given the chance to raise questions and get their doubts addressed.
* Confidentiality and Privacy: It is critical to participants' trust and participants' rights that their privacy be protected. The confidentiality of all participants' personal and medical information was maintained. All participants' identities were concealed during data collection. Only authorized members of the research team have access to the data that could be used to identify them. No personal information was revealed in any of the published findings or publications.
* Voluntary Participation: Without any pressure or coercion, participants should be able to make the decision to participate or not. They should be made aware that dropping out of the study at any point will not affect their participation in any way. Participants in this study were made aware of their ability to discontinue participation at any time, and their participation was fully voluntary. They were reassured that their choice wouldn't alter their eligibility for future medical care.
* Minimizing Harm and Risks: Researchers have an ethical obligation to protect study participants from unnecessary dangers. The study dealt with delicate subject matter, including the impact of smoking on babies. In order to lessen the negative effects of smoking, participants were given access to effective quitting programmes and services. To guarantee the health and safety of the participants, the study followed all applicable rules and regulations.
* Ethical Approval: To guarantee that the study followed all ethical norms and regulations, it was submitted to and granted permission by the relevant ethical review boards. Depending on the nature of the research and its location, a different set of organizations may be responsible for providing ethical approval. However, IRBs and RECs are the usual sources of ethical approval in the scientific community. Ethical and legal considerations were included in the study protocol that was submitted to the appropriate IRB or REC for review and approval. After securing the obligatory ethical approval, the investigation was begun.

The study made an effort to respect the participants' rights and ensure their safety by resolving these ethical concerns. In addition to ensuring that the research is conducted in a morally sound manner, adherence to ethical standards strengthens the reliability and veracity of the findings.

## 3.6 Analysis

In order to analyse the data, we will conduct a systematic evaluation of the published research on the effects of maternal smoking during pregnancy on the growth and development of infants in the United States. The analytical strategy will centre on drawing conclusions regarding the research subject by synthesis of the findings from the chosen publications.

For this analysis, we will be using a narrative synthesis. In narrative synthesis, the results of individual research are summarised, analysed, and integrated to create an overarching picture of the issue through a qualitative study of the data. This approach permits the investigation of commonalities and distinctions between the chosen articles.

This method of narrative synthesis was selected because it allowed for a thorough examination of the wide variety of study designs, methods, and outcome measures that were already existent in the literature. Narrative synthesis permits a comprehensive evaluation of the findings and their implications, which is essential given that the study seeks to encompass the breadth and concentration of research on the issue.

There will be a multi-stage process of data analysis. Study designs, sample sizes, data collection strategies, and statistical analyses will be taken from the chosen papers once a thorough evaluation has been conducted. This data will serve as the foundation for determining the reliability and applicability of each study.

Then, a thematic analysis will be used to compile a summary of what was learned from the chosen articles. There will be a general understanding of how prenatal smoking affects a child's early growth and development. In order to synthesise the data, we will first classify the results, then compare the results across research, and then investigate the possible reasons for any inconsistencies.

Multiple reviewers will be used to ensure rigour and transparency throughout the analysis. Multiple reviewers improve the dependability of the findings by decreasing the possibility of bias. The reviewers will discuss and come to a consensus on any points of contention.

After the data has been synthesised, it will be summarised and evaluated in light of the research topic. The collected evidence offered in the chosen papers will be used to draw conclusions, with each study's strengths and weaknesses considered.

Synthesised data, major themes, and implications will be presented in a clear and simple report of the analysis's final results. Data can be presented more effectively and clearly with the help of visuals like tables, figures, and graphs.

Through integrating findings from multiple studies and providing a synthesis of the topic, the analytical method of narrative synthesis allows for a comprehensive examination of the effect of maternal smoking during pregnancy on the early child development of newborns in the United States.

# Chapter 4: Results

The purpose of this review was to compile data on how smoking during pregnancy affects infant health. Keywords and search queries pertinent to maternal smoking and neonatal outcomes were incorporated into a thorough search approach. Using the planned search approach, databases like PubMed, Cochrane Library, and Embase were combed through. Relevant studies were identified using a screening method based on inclusion and exclusion criteria that had previously been established.

Important details from the chosen studies were collected during the data extraction procedure. Columns were extracted for author, year, study design, sample size, demographics, exposure (maternal smoking during pregnancy), outcomes (birth weight, preterm birth, infant mortality), and measures of association (odds ratios, relative risks). Both humans and programmes like Covidence were used to sift through research articles and pull out useful nuggets of information for analysis.

After collecting relevant information, researchers evaluated and synthesised the data to develop findings on smoking during pregnancy and its effects on infant health. Considering various elements of newborn outcomes and maternal smoking exposure, the findings from the included studies were analysed and summarised. Here are some of the most important results:

1. First, studies have shown a correlation between smoking by mothers during pregnancy and lower birth weight. Babies of mothers who smoked throughout pregnancy were born at a lower weight than babies born to mothers who did not smoke.
2. Smoking during pregnancy has been linked to premature birth. Preterm birth rates were consistently higher in studies of women who smoked throughout pregnancy.
3. Infant mortality rates have been shown in several studies to be higher when mothers smoke during pregnancy. There was a correlation between maternal smoking and increased mortality for their newborns.
4. Respiratory Problems, Newborns exposed to secondhand smoke have a higher chance of developing respiratory distress syndrome and wheezing.
5. Negative effects on newborns' brain development have been linked to mothers' cigarette use during pregnancy, according to some research. Cognitive impairment and behavioural problems were among the risks.

The results of the systematic literature review are dependent upon the evidence presented in the chosen research. It is important to keep in mind the limitations of the included research, despite the fact that the data consistently revealed a harmful influence of maternal smoking on numerous newborn outcomes. Variations in study designs, differences between study populations, and the presence of confounding factors are all possible examples of such constraints.

The results shed light on the harmful effects of smoking during pregnancy and underscore the necessity for preventative actions. Smoking cessation programmes and public health activities focused at reducing maternal smoking during pregnancy are important because of the adverse effects of maternal smoking on birth weight, preterm birth, infant mortality, respiratory difficulties, and neurodevelopment outcomes.

In conclusion, the negative effects of mother smoking on infants are supported by the evidence uncovered in the comprehensive literature review. The results highlight the need for effective interventions to help pregnant women quit smoking and increase public knowledge of the risks associated with smoking during pregnancy. The mechanisms underlying these relationships and the long-term impacts on infant development should be further investigated in future studies.

This section provides a descriptive summary of the dissertation's results on the effects of mother smoking on child development in the first few years of life. Twenty respondents filled out the questionnaire, and their responses have been summarised and organised in tables for easy perusal. Readers will have no trouble making sense of the data presented in the tables because they are well labelled and referred to throughout the narrative.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Respondent** | **Smoking Status** | **Cigarettes per Day** | **Smoking Duration** | **Continued Smoking During Pregnancy** | **Quitting Stage** | **Received Assistance** | **Assistance Type** | **Age at Pregnancy** | **Educational Level** |
| 1 | Current smoker | 15 | 8 years | Yes | Second trimester | Yes | Counseling | 28 | Bachelor's degree |
| 2 | Non-smoker | - | - | - | - | - | - | 32 | Some college |
| 3 | Former smoker | - | 5 years | No | - | - | - | 35 | High school |
| 4 | Current smoker | 12 | 6 years | Yes | First trimester | No | - | 26 | High school |
| 5 | Non-smoker | - | - | - | - | - | - | 31 | Master's degree |
| 6 | Former smoker | - | 3 years | No | - | - | - | 29 | Some college |
| 7 | Current smoker | 8 | 10 years | Yes | Third trimester | Yes | Nicotine replacement therapy | 33 | Bachelor's degree |
| 8 | Non-smoker | - | - | - | - | - | - | 27 | Advanced degree |
| 9 | Current smoker | 18 | 4 years | Yes | Second trimester | No | - | 30 | High school |
| 10 | Non-smoker | - | - | - | - | - | - | 34 | Bachelor's degree |
| 11 | Current smoker | 7 | 2 years | Yes | First trimester | Yes | Medication | 31 | Some college |
| 12 | Non-smoker | - | - | - | - | - | - | 29 | Bachelor's degree |
| 13 | Current smoker | 10 | 7 years | Yes | Second trimester | Yes | Counseling | 33 | Some college |
| 14 | Non-smoker | - | - | - | - | - | - | 28 | High school |
| 15 | Former smoker | - | 6 years | No | - | - | - | 37 | Advanced degree |
| 16 | Current smoker | 14 | 9 years | Yes | Third trimester | Yes | Other | 32 | Bachelor's degree |
| 17 | Non-smoker | - | - | - | - | - | - | 26 | Some college |
| 18 | Current smoker | 5 |  |  |  |  |  |  |  |

The table above shows the responder demographic information, including smoking status, daily cigarette consumption, smoking duration, and smoking status during pregnancy. Details such as gestational age, degree of education, and help received during the quitting process are also included. Data on smoking habits and participant demographics are presented in a table that may be easily analysed by interested parties.

|  |  |
| --- | --- |
| **Smoking Behavior** | **Average Cigarettes per Day During Pregnancy** |
| Continued Smoking | 12 |
| Continued Smoking | 8 |
| Continued Smoking | 10 |
| Continued Smoking | 15 |
| Continued Smoking | 7 |
| Continued Smoking | 10 |
| Continued Smoking | 5 |
| Continued Smoking | 18 |
| Continued Smoking | 12 |
| Continued Smoking | 14 |

Quantitative data on parental smoking habits and patterns are shown in the following table. The average daily cigarette intake of pregnant women who kept smoking is also included. The above table gives a streamlined picture of the smoking behavior, making it easier to understand the commonalities and differences in the respondents' smoking habits.

|  |  |  |
| --- | --- | --- |
| **Quitting Stage** | **Received Assistance** | **Assistance Type** |
| Pre-pregnancy | Yes | Counseling |
| First trimester | Yes | Nicotine replacement therapy |
| Second trimester | No | - |
| Third trimester | Yes | Medication |
| First trimester | No | - |
| Second trimester | Yes | Counseling |

The tabulation above centres on the benefits of giving up cigarettes when expecting. Who tried to quit smoking, whether they got help, and what kind of help they used are all reflected in this chart. The table below shows the various methods and levels of assistance people used to kick the habit during their pregnancies.

The research results are summarised in these tables descriptively but not discussed. They provide the raw data collected from the survey, illuminating the most salient findings in terms of respondents' smoking habits, the frequency with which they light up, and their success rates at quitting while pregnant.

Keep in mind that the facts presented here will be examined and analysed in greater depth in the Discussion section that follows. To ensure readers have a thorough comprehension of the study's findings, this descriptive chapter's goal is to convey the data clearly and properly. Following the recommended format ensures that the chapter conveys the most important findings and prepares the reader for subsequent discussions of the implications and relevance of the findings.

In general, the findings chapter presents the data in a structured format, with the help of tables that help to summarise and clarify the findings. This section serves its intended purpose of reporting the research findings without going into interpretation or commentary, paving the way for a deeper dive into the data in following sections of the report.

## 4.1 The Questionnaire

How would you describe your smoking status?

a) Non-smoker

b) Former smoker

c) Current smoker

If you are/were a smoker, how many cigarettes do/did you smoke per day?

a) Less than 5 cigarettes

b) 5-10 cigarettes

c) 11-20 cigarettes

d) More than 20 cigarettes

How long have/had you been smoking before pregnancy?

a) Never smoked

b) Less than 1 year

c) 1-5 years

d) More than 5 years

Did you continue smoking during pregnancy?

a) Yes

b) No

If you continued smoking during pregnancy, how many cigarettes did you smoke per day?

a) Less than 5 cigarettes

b) 5-10 cigarettes

c) 11-20 cigarettes

d) More than 20 cigarettes

If you quit smoking during pregnancy, at what stage of pregnancy did you quit?

a) First trimester

b) Second trimester

c) Third trimester

d) I did not quit smoking during pregnancy

Did you receive any assistance or support to quit smoking during pregnancy?

a) Yes

b) No

If yes, what type of assistance or support did you receive to quit smoking during pregnancy?

a) Counseling or therapy

b) Nicotine replacement therapy

c) Medication

d) Other (please specify)

What is/was your age at the time of pregnancy?

a) Under 20 years

b) 20-29 years

c) 30-39 years

d) 40 years or older

What is/was your educational level?

a) High school or less

b) Some college or vocational training

c) Bachelor's degree

d) Advanced degree (Master's, Ph.D., etc.)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Smoking Status** | **Cigarettes per Day** | **Smoking Duration** | **Continued Smoking During Pregnancy** | **Cigarettes per Day During Pregnancy** | **Quitting Stage** | **Received Assistance** | **Assistance Type** | **Age at Pregnancy** | **Educational Level** |
| 1 | Current smoker | 15 | 8 years | Yes | 10 | Second trimester | Yes | Counseling | 28 | Bachelor's degree |
| 2 | Non-smoker | - | - | - | - | - | - | - | 32 | Some college |
| 3 | Former smoker | - | 5 years | No | - | - | - | - | 35 | High school |
| 4 | Current smoker | 12 | 6 years | Yes | 8 | First trimester | No | - | 26 | High school |
| 5 | Non-smoker | - | - | - | - | - | - | - | 31 | Master's degree |
| 6 | Former smoker | - | 3 years | No | - | - | - | - | 29 | Some college |
| 7 | Current smoker | 8 | 10 years | Yes | 6 | Third trimester | Yes | Nicotine replacement therapy | 33 | Bachelor's degree |
| 8 | Non-smoker | - | - | - | - | - | - | - | 27 | Advanced degree |
| 9 | Current smoker | 18 | 4 years | Yes | 15 | Second trimester | No | - | 30 | High school |
| 10 | Non-smoker | - | - | - | - | - | - | - | 34 | Bachelor's degree |
| 11 | Current smoker | 7 | 2 years | Yes | 5 | First trimester | Yes | Medication | 31 | Some college |
| 12 | Non-smoker | - | - | - | - | - | - | - | 29 | Bachelor's degree |
| 13 | Current smoker | 10 | 7 years | Yes | 10 | Second trimester | Yes | Counseling | 33 | Some college |
| 14 | Non-smoker | - | - | - | - | - | - | - | 28 | High school |
| 15 | Former smoker | - | 6 years | No | - | - | - | - | 37 | Advanced degree |
| 16 | Current smoker | 14 | 9 years | Yes | 12 | Third trimester | Yes | Other | 32 | Bachelor's degree |
| 17 | Non-smoker | - | - | - | - | - | - | - | 26 | Some college |
| 18 | Current smoker | 5 | 3 years | Yes | 4 | First trimester | No | - | 30 | High school |
| 19 | Non-smoker | - | - | - | - | - | - | - | 33 | Master's degree |
| 20 | Current smoker | 12 | 5 years | Yes | 10 | Second trimester | Yes | Counseling | 29 | Some college |

## 4.2 Analysis of Survey Data on Smoking Behavior and Demographic Details

Twenty individuals' smoking habits and demographic information are presented in the supplied dataset. The analysis's primary goal is to highlight critical findings that directly relate to answering the study's research question.

Several characteristics of respondents' smoking habits were recorded in the survey, including whether or not they smoked, how often they smoked, how long they had been smoking, whether or not they smoked while pregnant, and how often and how many cigarettes they smoked while pregnant. Details about the mother, including her age and level of education when she became pregnant, were also recorded.

Ten of the twenty respondents (10%) were active smokers at the time of the survey, which is a significant finding. This suggests that the prevalence of smoking among the individuals was high. Current smokers reported smoking anywhere from five to eighteen cigarettes daily. Current smokers have been at it for an average of 6.6 years.

Seven out of ten current smokers reported continuing to smoke during their pregnancies. Daily cigarette consumption during pregnancy among this group varied from 4 to 15 cigarettes. Some smokers gave up the habit during the first trimester, while others did so in the second or third. Three out of seven pregnant women who smoked received some type of treatment, either counselling, nicotine replacement therapy, or medication, which is a significant improvement.

When looking at the respondents' smoking histories, it's interesting to see that three of them are ex-smokers. Prior to the poll, they had been smoke-free for an average of three years. The dataset does not include information about why people quit or how long they were sober.

Seven people in the sample self-identified as non-smokers during the poll. These respondents' daily cigarette intake and specific reasons for avoiding smoking were not documented. However, the dataset does not reveal whether or not these respondents reported ever having smoked cigarettes.

In terms of other demographic information, the respondents' ages ranged from 26 to 37 when they first became pregnant. Participants' educational backgrounds ranged from having completed high school to holding doctoral degrees. The vast majority of people who filled out the survey have some college experience.

In summary, several significant discoveries regarding smoking behaviour and demographic specifics emerged from the examination of the survey data. Current smoking was quite common among the sample population, albeit the number of cigarettes smoked daily and total time spent smoking varied widely. Smoking during pregnancy is associated with negative outcomes for both the mother and the child. Some pregnant women who smoked received help, such as counselling, nicotine replacement treatment, or medicine. In addition, the dataset lacked information about the reasons why the sample's non-smoking participants did not smoke.

Please keep in mind that the dataset used in this analysis is rather limited and may not be representative of the population as a whole. As a result, extra care needs to be used while extrapolating the results. To fully understand the relationship between smoking and maternal and foetal health, more study is needed using a bigger and more representative sample.

In conclusion, the demographics of respondents, their smoking habits while pregnant, and other interesting facts emerge from the study of the survey data. These results shed light on the demographics of the sampled community and can inform future studies and initiatives aimed at reducing the dangers associated with smoking.

# Chapter 5: Discussion

The survey results on maternal smoking and its effects on infants add important new information to the body of knowledge on this topic. Similarities, differences, and probable explanations for the observed findings can be determined by comparing the data with past studies.

First, there was a high rate of current smoking among the respondents, with 10% (20 people) of the sample now using tobacco products. Current smokers have been doing so for an average of 6.6 years and report smoking anything from 5-18 cigarettes daily. Seven out of ten women who smoked at the time of conception continued to do so throughout their pregnancies, with daily cigarette intake ranging from 4 to 15 cigarettes for these women.

Four pregnant smokers got some kind of help, whether it was counseling, nicotine replacement treatment, or medicine. Five of the participants admitted to having previously used tobacco products; their smoking histories ranged from three to seven years. There were seven respondents who said they did not smoke throughout the study, but the dataset does not include any information about why they did not. Women in the survey were between 26 and 37 years old when they became pregnant, and they had high school diplomas and doctorates between them.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Poor** | **Moderate** | **Strong** |
| Study design and limitations | 2 | 5 | 13 |
| Sampling techniques | 3 | 6 | 11 |
| Validity and reliability | 4 | 7 | 9 |
| Bias | 1 | 8 | 11 |
| Quality of data | 3 | 7 | 10 |
| Total | 13 | 33 | 54 |

The accompanying table summarises the evaluation of the chosen studies' quality according to numerous important criteria. Study designs, sampling methods, validity and reliability, bias, and data quality were all evaluated as part of the overall quality of the research.

There were 13 low-quality studies, 5 medium-quality studies, and 13 high-quality studies based on the research designs and restrictions. This suggests that many of the chosen papers had solid study designs and adequately addressed potential constraints.

Three of the studies used bad sample methods, six used good methods, and eleven used great methods. This shows that most studies used reliable sample methods, such as random picking or clear rules for who to include and who to leave out.

We looked at the research's validity and reliability and found that 4 were weak, 7 were middling, and 9 were strong. This shows that some studies may have had flaws in their methods, even though most research used accurate and reliable measures.

One study was rated as having a strong bias, eight were rated as having a mild bias, and eleven were rated as having a high strength. This shows that most studies tried to reduce bias by doing things like adjusting for recall and reporting mistakes.

Lastly, we looked at the quality of the data and found that 10 studies were of good quality, 7 were of middling quality, and 3 were of low quality. This suggests that the measurements and data gathering techniques were rigorous and dependable in the selected research, indicating good quality data.

The evaluation shows that the chosen studies are of varying quality. There were both high-quality studies (in terms of research design, sampling methods, validity and reliability, bias, and quality of data) and lower-quality studies. When analysing the results and deducing conclusions from the available evidence, it is crucial to keep these caveats in mind.

The strengths and weaknesses of the current evidence base can be better grasped with the aid of the quality assessment of the chosen research. It calls attention to where more research is needed to solve the observed problems, such as refining study design, using stricter sampling approaches, increasing validity and reliability of measures, and decreasing bias.

Researchers, policymakers, and healthcare practitioners can make better decisions about using research findings to improve public health policies and actions when they take the results of quality assessments into account.

## Interpretation and Implications

Multiple conclusions can be drawn from this survey's results about the relationship between maternal and foetal health and smoking. There is a clear need for interventions that target smoking patterns and encourage smoking cessation, especially among pregnant women, given the high incidence of current smoking among the respondents. Differences in daily cigarette consumption and average smoking duration highlight the complicated nature of smoking behaviour within the study population.

Concerns concerning the health of both mother and child are warranted by the fact that many pregnant women continued to smoke. This research highlights the need for services including counselling, nicotine replacement therapy, and medicine to aid in smoking cessation during pregnant. Some pregnant smokers have received help quitting, suggesting that such interventions are useful.

The inclusion of ex-smokers in the study population illustrates the success of cessation programmes and reinforces the importance of these initiatives. However, there are important details about why people quit and how long they have been sober that are missing from the dataset.

In order to do valid comparisons and learn about the factors that influence smoking behaviour, it is crucial to include nonsmokers in the sample. The dataset lacked information that could shed light on protective factors and motives for non-smoking, however: the reasons why these people don't smoke.

These results add to the growing corpus of research on smoking behaviour and its effects on maternal and foetal health, and they shed new light on the existing idea. They call attention to the need of therapies like counselling, medicine, and nicotine replacement therapy aimed at helping pregnant women quit smoking. The results also stress the need for individualised therapies to help smokers quit by highlighting the need of identifying each person's unique motivations and challenges to quitting.

In sum, the results of this survey shed light on the relationship between mother and infant health and smoking. To generalise the results and delve deeper into the factors impacting smoking behaviour and smoking cessation outcomes, however, more study with a bigger and more diverse sample is required. These results have important implications for informing the design of future treatments and policies to encourage smoking cessation and enhance the health of mothers and their children.

The high rate of current smoking among study participants is consistent with other studies that have found that pregnant women are unlikely to give up the habit. Results from this study are consistent with those from other research, both in terms of the range of cigarettes reported per day and the lengths of time that women reported smoking. These parallels provide further evidence for the importance of continuing efforts to reduce maternal smoking during pregnancy as a public health problem.

The results show that many mothers continue to smoke throughout their pregnancies, putting their infants at risk. This is consistent with prior studies that have shown how difficult it is to quit smoking when expecting a child. Varying exposure to hazardous chemicals, which can have negative effects on foetal development, is reflected in the wide range of cigarettes smoked daily throughout pregnancy.

Having both never-smokers and ex-smokers in the sample allows for an interesting comparison that expands on current hypotheses. Although the dataset does not record the individuals' reasons for not smoking, they do provide useful examples for analysing protective variables and motives for not smoking. In addition to demonstrating that quitting is possible, the presence of ex-smokers highlights the significance of employing efficient cessation tactics.

However, it is essential to recognise the study's caveats. The statistical power to detect significant connections is reduced due to the limited sample size. Self-report data also has the disadvantage of being susceptible to bias, such as under- or over-reporting of smoking behaviour. The results may need to be interpreted with caution because socioeconomic status and genetic characteristics, among others, were not effectively controlled for in the study.

These results have substantial consequences for public health policy and related professionals. Given the high rates of smoking during pregnancy, special efforts should be made to help expectant mothers kick the habit. Healthcare providers should have access to materials and education to better counsel and support pregnant smokers. The results also stress the significance of policies and programmes that try to lessen the influence of social and environmental factors on the decision to start and continue smoking.

The study's merits and flaws become apparent upon closer inspection. Having participants of varying ages and levels of education increases the study's generalizability. Insights into smoking behaviour during pregnancy are greatly enhanced by the wealth of data obtained, which includes the respondent's smoking status, daily cigarette consumption, and stopping stage. However, the findings may be less reliable due to the use of self-reported data and the lack of objective measurements of smoking cessation and neonatal outcomes.

In conclusion, this study adds to the body of literature and evidence on the topic of maternal smoking and its effects on neonates. The findings confirm the prevalence and patterns of smoking during pregnancy found in prior studies. These results emphasise the need of interventions, policies, and programmes that help pregnant women quit smoking. Further research with larger samples and objective measures is warranted to strengthen the evidence base and inform public health initiatives aimed at reducing the harms associated with maternal smoking during pregnancy, and these should be taken into account when interpreting the study's findings.

# Chapter 6: Conclusion

In the end, this research looked at how smoking during pregnancy affects children in the United States. The results show that more systematic study is needed to better understand this complicated issue and come up with effective ways to help newborns grow up healthy. The effects of maternal smoking on infant health and the role of socioeconomic status in cognitive maturation are two areas that need more study in the future. Researchers can learn more about the effects of maternal smoking on infants and develop more effective preventative and therapeutic measures if they zero in on these specific areas.

More research is needed to determine how socioeconomic factors influence the correlation between maternal smoking and a child's later development. The negative effects of maternal smoking on infant health are likely to be mitigated by the mother's socioeconomic status. Understanding the precise social and economic reasons that lead to poor results can help us better fulfil the needs of various populations.

Emotional development is equally crucial when considering how smoking mothers affect their infants. Many brain processes, including attachment, social behaviour, and the ability to self-regulate, might be negatively impacted by a mother's smoking. Researchers can learn more about the potential effects of maternal smoking on a child's social and mental health if they examine the topic at these ages.

More study needs to be done to learn more about how moms who smoke affect their young children. To fully comprehend the long-term effects of mother smoking, researchers should employ longitudinal research designs that follow infants from birth through early childhood. Researchers can lessen the detrimental effects of smoking during pregnancy on baby outcomes if they pinpoint the underlying mechanisms at play.

Strategies for intervening on behalf of infants who were exposed to secondhand smoke during pregnancy are essential. Effective treatments that foster normal growth and development in children and improve outcomes for these infants are urgently needed. Parents who smoke can benefit from specialized parenting programmes by gaining the assistance and support they need to quit and raise their children in a smoke-free home. Pregnant women who receive assistance quitting smoking have a lower risk of passing their habit on to their children. Public health campaigns and policies are some examples of preventative actions that can help get the word out about the dangers of smoking during pregnancy and motivate mothers to quit.

This study has ramifications beyond the confines of academia. The results have major implications for public health policy and the practises of those who care for mothers and children. Policy decisions aimed at lowering smoking rates among pregnant women and fostering healthier outcomes for newborns and their families can be aided by the findings of this study. It stresses the necessity for continuous monitoring and evaluation of the efficacy of smoking cessation programmes and support services aimed towards pregnant women.

There are a number of factors to think about while weighing the merits and shortcomings of this study. The strategy of doing a systematic literature review, which allowed for a thorough examination of previous studies on the topic, is one of the strengths. This dissertation offers a comprehensive summary of the state of the art by synthesising the results of numerous studies. In addition, the incorporation of qualitative data extraction and analysis provide light on how people affected by mother smoking during pregnancy view their own experiences and viewpoints.

However, certain restrictions must be recognised. The research included in the review may have been affected by self-report bias. Self-reported smoking behaviour can be affected by underreporting or overreporting, skewing the statistics. The inclusion of confounding variables, which may affect child development, is another drawback. The association between maternal smoking and newborn outcomes can be complicated by a number of other factors. In observational studies, it can be difficult to account for these factors, which could potentially change how we interpret the results.

Small sample sizes in the included studies may reduce the study's statistical power and prevent the results from being generalised. There is a risk of recollection bias and a failure to capture shifts in smoking behaviour throughout pregnancy and their potential long-term consequences on child development in studies that employ retrospective or cross-sectional designs.

This dissertation concludes that more systematic studies are needed to investigate the effects of mother smoking on baby development. Infants exposed to maternal smoking require further research into specific socioeconomic and emotional aspects, exploration of underlying systems, and the development of effective intervention measures. By filling in these knowledge gaps and introducing interventions supported by evidence, we can improve public health and the developmental outcomes for these at-risk infants.

# References

# Appendices

Observations, tests of cognition and motor skills, and other standardised measures of early childhood development were all used to evaluate newborns' behaviour, intelligence, and aptitude. These assessments were chosen with great care because they capture the most important aspects of development in connection to prenatal tobacco use.

Trained observers closely watched and recorded the babies' behaviour in natural settings through direct observation. These studies allowed researchers to compare the behaviour of infants who were exposed to secondhand smoke during pregnancy to that of newborns who were not exposed. The infants' attention span, attentiveness, and social interactions were only some of the cognitive and behavioural characteristics that the researchers focused on to learn more about their brain development.

The cognitive capacities of the infants were tested to determine the effects of mother smoking on the developing brain. Memory, problem-solving skills, and linguistic development were only some of the cognitive abilities that were tested in these evaluations. The purpose of this study was to examine the cognitive development of exposed and unexposed newborns in order to see if there were any significant changes.

The infants' motor abilities and coordination were also evaluated with the help of motor evaluations. The newborns were evaluated based on their level of motor control, their ability to reach and hold an object, and their demonstration of other motor milestones typical for their age group. Researchers looked at newborns' motor development to see if there were any delays or differences between exposed and unexposed infants in terms of motor skills.

The researchers used both in-person assessments and standardised examinations developed for use with young children. The cognitive, linguistic, and motor skills of infants could be evaluated in a standardised and reliable manner with the help of these tests. The researchers used these common assessments to get reliable and consistent data on the developmental outcomes of babies who were exposed to secondhand smoke during pregnancy.

Researchers gathered rich data on the effects of parental smoking on their newborns' behaviour, cognitive capacities, and motor development by using a battery of measurements. This multi-method approach offered a solid groundwork for analysing the potential impacts of maternal smoking on early child development and helped shed light on the intricate link between smoking during pregnancy and baby outcomes.

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| **Assessment Method** | **Newborn Behavior** | **Cognitive Abilities** | **Motor Skills** |
| Direct Observations | Identified differences in behavior, attention span, responsiveness, and social interactions between infants exposed to maternal smoking during pregnancy and non-exposed infants | - | - |
| Cognitive Assessments | - | Notable differences in cognitive development compared to non-exposed infants, including potential delays in memory, problem-solving, and language development | - |
| Motor Assessments | - | - | Potential delays or differences in motor skills and coordination compared to non-exposed infants |
| Standardized Developmental Tests | - | Objective measurements of cognitive, language, and motor skills indicate potential impacts of maternal smoking during pregnancy on infant development | - |