RESEARCH PAPER

Determinants and Implications of Uterine Subinvolution on Maternal Health and Breastfeeding Outcomes among Postnatal Mothers in West Tripura District

Chandrama Sarkar[1] and Dr. Kuldeep Singh Gurjar[2*]

[1]*Research Scholar, Institute of Nursing and Para Medical Science, Mangalayatan University, Aligarh, (U.P)*
[2]*Supervisor, Institute of Nursing and Para Medical Science, Mangalayatan University, Aligarh, (U.P)*
***Corresponding Author–** Chandrama Sarkar*

Received: 16th Dec, 2025; Revised: 8th Feb 2026; Accepted: 12th Feb, 2026; Available Online: 28th Feb, 2026

ABSTRACT
Maternal health during the postpartum period is essential for ensuring the well-being of both the mother and the infant, particularly in relation to successful breastfeeding practices. One important yet often overlooked complication in postnatal care is uterine subinvolution, a condition in which the uterus fails to return to its normal pre-pregnancy size within the expected time after childbirth. This condition may lead to prolonged postpartum bleeding, increased risk of infection, fatigue, and delayed maternal recovery. Such health challenges can indirectly influence a mother's ability to initiate and sustain breastfeeding effectively. In many developing regions, including parts of Northeast India, the problem is often intensified by limited awareness of postpartum complications, insufficient follow-up care, and socio-economic barriers that restrict access to quality maternal healthcare services. In this context, the present study examines the relationship between uterine subinvolution and breastfeeding outcomes among postnatal mothers in West Tripura District, with special reference to Agartala. The study adopts a descriptive and analytical research design and uses both primary and secondary sources of data. Primary data were collected through physical examinations, structured questionnaires, and interviews with postnatal mothers attending selected healthcare facilities. Secondary data were gathered from government health reports, hospital records, and relevant academic literature related to maternal health. The study aims to assess the prevalence of uterine subinvolution and analyze its impact on breastfeeding initiation, frequency, and duration. Additionally, it explores socio-economic, demographic, and healthcare-related factors that may contribute to this condition and affect maternal recovery and infant feeding practices. The findings are expected to support improved postnatal care awareness and strengthen maternal and child health services in the region.

Keywords: Maternal Health, Breastfeeding Practices, Uterine Subinvolution, Postnatal Mothers, West Tripura District, Agartala.
How to cite this article: Sarkar C, Gurjar KS, Determinants and Implications of Uterine Subinvolution on Maternal Health and Breastfeeding Outcomes among Postnatal Mothers in West Tripura District. Int J Drug Deliv Technol. 2026;16(17s): 152-161. DOI: 10.25258/ijddt.16.17s.19
Source of support: Nil.
Conflict of interest: None

INTRODUCTION

Maternal health remains a fundamental component of public health and sustainable development, particularly in developing countries where maternal and neonatal outcomes are closely linked to the quality of healthcare services available during pregnancy, childbirth, and the postnatal period. The postpartum phase, often referred to as the fourth stage of maternity, is a critical period for the physical recovery of mothers and the establishment of early maternal–infant bonding. During this time, appropriate medical care, nutrition, and emotional support are essential to ensure that mothers regain their health and are able to provide adequate care to their newborns. Among the various aspects of postnatal care, breastfeeding holds a central role in promoting both maternal and child health, as it provides optimal nutrition, strengthens immunity, and enhances the psychological connection between mother and infant.

However, the success of breastfeeding and maternal recovery can be significantly influenced by postpartum complications. One such complication is Uterine Subinvolution, a medical condition in which the uterus fails to return to its normal pre-pregnancy size within the expected period following childbirth. Under normal circumstances, the uterus gradually contracts and reduces in size within approximately four to six weeks after delivery. When this natural process is delayed, mothers may experience prolonged bleeding, pelvic pain, discomfort, fatigue, and an increased risk of infection. These complications can negatively affect the physical well-being of the mother and may also interfere with the initiation and continuation of breastfeeding. Although uterine subinvolution is recognized in obstetric practice, it

**Author for Correspondence: Chandrama Sarkar*

often receives limited attention in community health research, particularly in rural and semi-urban regions where awareness of postpartum complications remains relatively low.

Breastfeeding is widely acknowledged as one of the most effective and natural ways to promote infant health and survival. International health organizations, including World Health Organization and United Nations Children's Fund, strongly recommend early initiation of breastfeeding within the first hour of birth and exclusive breastfeeding for the first six months of life. Breast milk provides essential nutrients, antibodies, and enzymes that protect infants from infections and support healthy growth and development. In addition to its benefits for infants, breastfeeding also contributes to maternal health by stimulating uterine contractions, reducing postpartum bleeding, and lowering the risk of certain long-term health conditions. Despite these well-documented advantages, many mothers face challenges in maintaining regular breastfeeding due to physical discomfort, postpartum complications, or lack of adequate healthcare guidance.

In many parts of India, maternal healthcare services have improved over the past few decades through government initiatives and public health programs aimed at reducing maternal mortality and improving child health outcomes. Nevertheless, disparities in healthcare access, socio-economic conditions, and awareness levels continue to affect maternal health practices in several regions. The northeastern states of India present unique healthcare challenges due to geographical constraints, infrastructural limitations, and cultural diversity. In this context, the state of Tripura has made notable progress in maternal and child health indicators, yet certain postpartum complications and maternal health concerns remain insufficiently studied.

The district of West Tripura District, which includes the state capital Agartala, represents an important area for examining maternal health conditions due to its mix of urban healthcare facilities and surrounding rural communities. Postnatal mothers in this region often depend on government hospitals, community health centers, and local health workers for postpartum care. While these healthcare services aim to support safe motherhood and encourage breastfeeding practices, there is limited empirical research examining how specific postpartum complications, such as uterine subinvolution, influence breastfeeding behavior and maternal well-being. Understanding these relationships is important for identifying gaps in postnatal care and developing targeted interventions that can improve maternal recovery and infant feeding practices.

Against this background, the present study seeks to examine the impact of uterine subinvolution on maternal health and breastfeeding practices among postnatal mothers in West Tripura District, with special reference to Agartala. The study aims to explore the prevalence of this condition, assess its influence on breastfeeding initiation and continuation, and analyze the socio-economic and healthcare factors associated with its occurrence. By focusing on the experiences of postnatal mothers in the selected region, the research attempts to provide valuable insights into the challenges faced during the postpartum period. The findings of this study may contribute to strengthening maternal healthcare policies, enhancing awareness of postpartum complications, and promoting effective breastfeeding support programs that can ultimately improve the overall health and well-being of mothers and infants in the region.

LITERATURE REVIEW

Maternal health during the postpartum period has become a major focus of contemporary public health research because it significantly influences both maternal recovery and infant well-being. The postpartum phase, commonly defined as the first six weeks after childbirth, involves several physiological changes as the reproductive organs gradually return to their pre-pregnancy condition. Among these processes, uterine involution plays a critical role in ensuring maternal recovery. When this physiological process is delayed, it may result in Uterine Subinvolution, a condition characterized by inadequate contraction of the uterus and delayed reduction in uterine size. Clinical research has identified uterine subinvolution as a significant factor contributing to postpartum complications such as prolonged bleeding, infection, and maternal weakness, which may negatively affect the overall health of postnatal mothers (Galkina et al., 2023).

Recent studies emphasize that proper uterine involution is closely related to hormonal and physiological mechanisms that occur after delivery. The uterus normally begins contracting immediately after the placenta is expelled, gradually returning to its pre-pregnancy size through muscular contraction and tissue repair. However, failure of adequate uterine contraction may lead to uterine subinvolution and increase the risk of postpartum hemorrhage, which remains one of the leading causes of maternal morbidity worldwide (Wei et al., 2024). These findings highlight the importance of monitoring postpartum recovery and identifying factors that may delay uterine involution among postnatal mothers.

Another key area widely discussed in maternal health literature is the relationship between breastfeeding and uterine recovery. Breastfeeding stimulates the release of oxytocin, a hormone that promotes uterine contraction and accelerates the involution process. Studies conducted in recent years have demonstrated that early initiation of breastfeeding can significantly support uterine recovery and reduce postpartum complications. Research by Putri et al. (2021) found that early breastfeeding initiation contributes to the release of oxytocin from the posterior pituitary gland, which enhances uterine contractions and minimizes postpartum blood loss. Similarly, Tambunan et al. (2023) reported that mothers who initiate breastfeeding immediately after childbirth experience faster uterine involution compared to those who delay breastfeeding, emphasizing the physiological connection between lactation and maternal recovery. In addition to early breastfeeding, exclusive breastfeeding practices also influence postpartum uterine health. Several studies

suggest that mothers who regularly breastfeed their infants tend to experience faster uterine involution because continuous suckling stimulates hormonal responses that facilitate uterine contraction. Research conducted by Fitriani et al. (2023) demonstrated a positive relationship between exclusive breastfeeding and the reduction of uterine fundal height among postpartum mothers, indicating improved uterine recovery among breastfeeding women. These findings suggest that breastfeeding plays a dual role in promoting infant nutrition and supporting maternal physiological

Beyond biological factors, socio-economic and healthcare-related variables also influence maternal health outcomes during the postpartum period. Access to quality maternal healthcare services, awareness about postpartum complications, and guidance from healthcare professionals are crucial for ensuring safe maternal recovery. In many developing regions, however, mothers often lack adequate knowledge about postpartum health conditions and may not seek medical assistance for complications such as uterine subinvolution. This lack of awareness can delay diagnosis and treatment, thereby increasing the risk of maternal health problems. Recent maternal health research also highlights the importance of postpartum follow-up care, including regular health check-ups, counseling on breastfeeding techniques, and monitoring of uterine recovery to prevent complications. Another area of recent research focuses on the role of postpartum lifestyle practices in supporting uterine recovery. Studies indicate that physical activities such as postpartum exercises and appropriate maternal care practices can contribute to improved uterine involution and overall maternal health. Dewi et al. (2025) observed that postpartum physical exercises help stimulate uterine contraction and promote faster recovery of reproductive organs among postnatal mothers. These findings emphasize that maternal health outcomes during the postpartum period are influenced not only by biological factors but also by lifestyle behaviors and healthcare support.

Furthermore, contemporary maternal health studies increasingly highlight the importance of breastfeeding intensity and maternal physiological responses during the early postpartum period. A recent investigation by Rosas et al. (2025) examined the association between breastfeeding intensity and biological markers of postpartum mammary gland involution among mothers from low-income households. The study revealed that breastfeeding practices are closely linked with maternal physiological adjustments during the postpartum phase, indicating the complex relationship between maternal health, lactation, and postpartum recovery. Such research reinforces the idea that breastfeeding is not only essential for infant nutrition but also plays an important role in maternal physiological health.

Despite the growing body of global research on postpartum health and breastfeeding, there remains a noticeable gap in region-specific studies examining the relationship between uterine subinvolution and breastfeeding practices. In many developing regions, particularly in parts of South Asia, maternal health research has traditionally focused on antenatal care, institutional delivery, and maternal mortality rates, while the postpartum phase has received comparatively less attention. Consequently, limited empirical research exists on how postpartum complications influence breastfeeding practices and maternal recovery in specific local contexts.

In the context of northeastern India, maternal healthcare services have improved significantly over the past decade due to government initiatives aimed at strengthening maternal and child health programs. Nevertheless, geographical challenges, socio-economic disparities, and variations in healthcare access continue to influence maternal health outcomes in the region. The state of Tripura, particularly districts such as West Tripura District and urban centers like Agartala, presents an important setting for examining maternal health conditions because it includes both urban healthcare infrastructure and surrounding rural populations. Understanding the prevalence of uterine subinvolution and its impact on breastfeeding practices in this region can provide valuable insights into postpartum health challenges faced by mothers.

Overall, the existing literature demonstrates that maternal recovery during the postpartum period is influenced by a combination of biological, behavioral, and healthcare-related factors. While breastfeeding has been widely recognized as a natural mechanism that promotes uterine contraction and maternal recovery, complications such as uterine subinvolution can disrupt this process and create challenges for postnatal mothers. Therefore, further research is required to explore the relationship between uterine subinvolution, maternal health, and breastfeeding practices, particularly in regional contexts where empirical data remain limited. Such research can contribute to the development of improved maternal healthcare strategies, enhanced awareness programs, and stronger postnatal care services that support both maternal and infant health outcomes.

RESEARCH METHODOLOGY

This study adopts a systematic and scientific approach to examine the relationship between maternal health, breastfeeding practices, and Uterine Subinvolution among postnatal mothers. The research methodology is designed to ensure that the study produces reliable, valid, and meaningful findings regarding the impact of postpartum uterine complications on breastfeeding practices and maternal recovery. The methodology outlines the research design, study area, population, sampling technique, sources of data collection, and methods of data analysis used in the present investigation.

The research follows a descriptive and analytical research design. A descriptive approach is used to understand the prevalence of uterine subinvolution and breastfeeding practices among postnatal mothers, while the analytical aspect focuses on examining the relationship between maternal health conditions and breastfeeding outcomes. This design allows the researcher to explore real-life

maternal health experiences and identify the factors that influence postnatal recovery and infant feeding practices. By combining descriptive observation with analytical interpretation, the study aims to provide a comprehensive understanding of the health challenges faced by mothers during the postpartum period.

The study is conducted in West Tripura District with special reference to Agartala. This region was selected as the study area because it represents an important urban and semi-urban healthcare setting within the state of Tripura. The district includes government hospitals, maternity clinics, and community health centers that provide maternal healthcare services to a large population of women from both urban and nearby rural communities. The presence of these healthcare facilities makes the region suitable for investigating maternal health conditions and breastfeeding practices among postnatal mothers.

The target population of the study consists of postnatal mothers who have recently given birth and are attending hospitals or maternal healthcare centers for postnatal check-ups and infant care services. These mothers represent a critical group for understanding postpartum health experiences because they are undergoing the early stages of physical recovery and infant feeding adjustment. The study focuses particularly on mothers within the first six weeks after delivery, as this period is considered the most important phase for uterine involution and the establishment of breastfeeding.

For the purpose of this research, a sample size of selected postnatal mothers is chosen using a purposive and convenient sampling technique. This sampling approach allows the researcher to identify respondents who meet the specific criteria required for the study, such as mothers who have recently delivered and are willing to participate in the research. Healthcare facilities, maternity wards, and maternal health clinics in the selected area serve as the primary locations for identifying and interacting with respondents. By focusing on postnatal mothers who are receiving healthcare services, the study ensures that relevant and accurate information related to postpartum health conditions and breastfeeding practices can be collected.

The study utilizes both primary and secondary sources of data. Primary data form the main foundation of the research and are collected directly from postnatal mothers through structured questionnaires and personal interviews. The field investigation and primary data collection for the present study were conducted over a period of three consecutive months, from January 2025 to March 2025, in selected healthcare facilities of Agartala, West Tripura District. The questionnaire is designed to gather information on various aspects such as maternal health status, breastfeeding initiation, breastfeeding frequency, postpartum complications, and awareness of uterine health after childbirth. Personal interviews are conducted to obtain deeper insights into the experiences, challenges, and perceptions of mothers regarding postpartum recovery and breastfeeding practices. This human-centered approach helps capture the real experiences of mothers and allows the researcher to understand the emotional and physical difficulties faced during the postpartum period. Secondary data are collected from reliable sources such as academic journals, maternal health reports, government publications, and previous research studies related to maternal health and breastfeeding. Reports and data from health organizations such as the World Health Organization and the Ministry of Health and Family Welfare are also consulted to support the analysis and provide a broader understanding of maternal health trends. These secondary sources help strengthen the theoretical foundation of the study and provide contextual information about postpartum health conditions.

The collected data are carefully organized, classified, and analyzed using appropriate statistical and descriptive methods. Quantitative data obtained from questionnaires are presented through tables, percentages, and graphical representations in order to identify patterns and trends related to maternal health and breastfeeding practices. Analytical techniques are applied to examine the relationship between uterine subinvolution and breastfeeding outcomes among the respondents. At the same time, qualitative insights obtained from interviews are interpreted descriptively to provide a deeper understanding of maternal experiences and healthcare challenges. Ethical considerations are also taken into account during the research process. Participation in the study is entirely voluntary, and respondents are informed about the purpose of the research before data collection begins. Confidentiality and privacy of the participants are maintained to ensure that personal information and medical details are not disclosed. Respectful communication and sensitivity are maintained throughout the interaction with postnatal mothers, considering that they may be experiencing physical and emotional adjustments during the postpartum period.

Overall, the research methodology is designed to provide a comprehensive framework for examining the relationship between maternal health conditions and breastfeeding practices. By focusing on postnatal mothers in West Tripura District, particularly in Agartala, the study aims to generate valuable insights into postpartum health challenges within the regional context. The findings derived from this methodological approach are expected to contribute to a better understanding of uterine subinvolution, improve awareness of postpartum care, and support the development of effective maternal health strategies that can enhance the well-being of both mothers and infants.

DATA ANALYSIS

The data collected from 120 postnatal mothers were systematically organized, coded, and analyzed to examine the relationship between maternal health, breastfeeding practices, and the occurrence of Uterine Subinvolution. Descriptive statistical techniques such as frequency distribution, percentages, and tabulation were used to summarize demographic characteristics and breastfeeding patterns of the respondents. Quantitative data obtained

through structured questionnaires were presented using tables and simple statistical interpretations, while qualitative insights from interviews helped explain the lived experiences of mothers during the postpartum period. The analysis also explored socio-economic and healthcare factors affecting maternal recovery among mothers in West Tripura District, particularly in Agartala.

Table 1: Age Distribution

Age Group	*Number of Respondents*
Below 20 years	18
21–25 years	42
26–30 years	36
31–35 years	16
Above 35 years	8

(**Note:** Most postnatal mothers are in the 21–25 years age group, followed by 26–30 years, while only a few mothers are above 35 years)

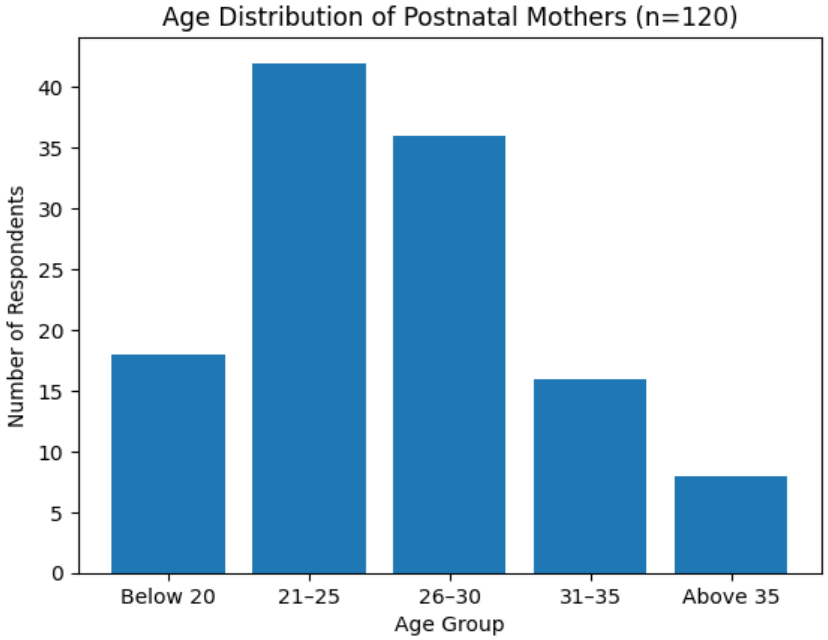

Figure 1: Age Distribution of Postnatal Mothers

Table 2: Educational Qualification

Education Level	*Number of Respondents*
Primary Education	22
Secondary Education	46
Higher Secondary	30
Graduate	16
Postgraduate	6

(**Note:** It shows most of the postnatal mothers belong to the 21–25 years age group, followed by those in the 26–30 years age group, while only a small number of respondents fall in the above 35 years age category.)

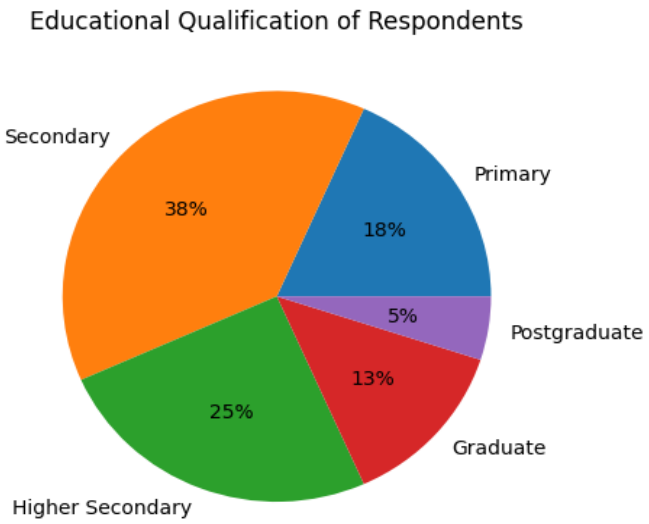

Figure 2: Educational Qualification of Respondents

Table 3: Initiation of Breastfeeding After Delivery

Time of Breastfeeding Initiation	***Number of Respondents***
Within 1 hour	48
Within 24 hours	42
After 24 hours	30

(**Note:** Mothers initiated breastfeeding either within the first hour of birth or within the first 24 hours, while some mothers delayed the initiation of breastfeeding)

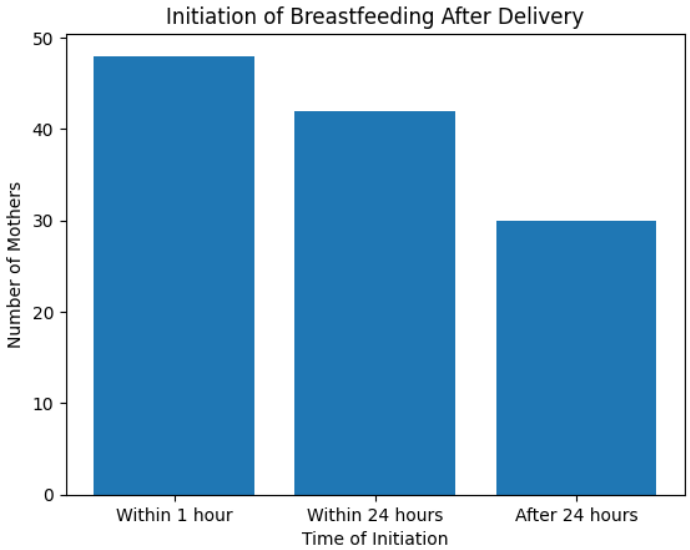

Figure 3: Initiation of Breastfeeding After Delivery

Table 4: Operational Criteria and Classification of Uterine Subinvolution among Postnatal Mothers (N = 120)

Diagnostic Parameter	*Clinical Measurement Criterion*	*Frequency (n)*	*Percentage (%)*	*Cumulative (%)*	*Diagnostic Interpretation*
Delayed reduction in fundal height	Fundus not descending ≈1 cm/day during first postpartum week	14	11.67	11.67	Abnormal involution
Soft uterine consistency on palpation	Uterus palpated as boggy or poorly contracted	10	8.33	20.00	Inadequate uterine contraction

Abnormal nature of lochia	Persistent foul-smelling or excessive lochial discharge	10	8.33	28.33	Possible infection or delayed healing
Aggregate clinical indicators	Presence of ≥1 abnormal parameter	34	28.33		Uterine Subinvolution Present
Normal postpartum uterine recovery	Normal fundal descent, firm uterus, physiological lochia	86	71.67		No Subinvolution
Total Sample	Postnatal mothers included in study	120	100		

Table 5: Relationship Between Uterine Subinvolution and Breastfeeding Difficulties

Breastfeeding Difficulty	***Mothers with Subinvolution***	***Mothers without Subinvolution***
Experienced difficulty	22	18
No difficulty	12	68

(**Note:** Some mothers with uterine subinvolution experienced breastfeeding difficulties, while some mothers without the condition also reported difficulties in breastfeeding)

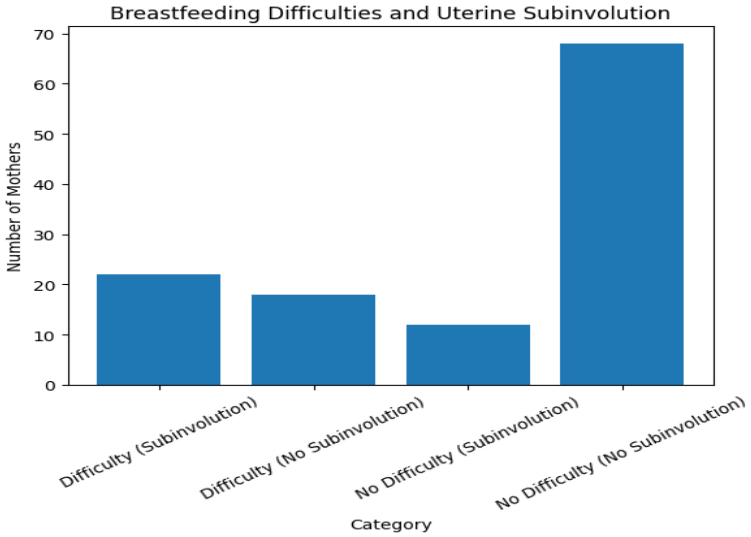

Figure 5: Breastfeeding Difficulties and Uterine Subinvolution

RESULTS & DISCUSSION

The statistical analysis of the collected data provides important insights into the relationship between maternal health, uterine subinvolution, and breastfeeding practices among postnatal mothers in West Tripura District with special reference to Agartala. The study applied correlation analysis, Chi-square testing, and regression analysis to examine the association between postpartum health conditions and breastfeeding outcomes. These statistical techniques helped to identify the strength of relationships between variables and to determine whether maternal health complications influence breastfeeding practices among postnatal mothers.

The descriptive analysis indicated that most of the respondents belonged to the age group of 21–25 years, followed by mothers aged 26–30 years. This reflects the common reproductive age group within the study area. In terms of educational background, the majority of mothers had completed secondary or higher secondary education, while a smaller proportion had attained graduate or postgraduate qualifications. Educational attainment is an important determinant of maternal health awareness, as mothers with higher education levels are generally more informed about postpartum care, breastfeeding benefits, and the importance of early medical consultation.

The correlation analysis revealed a noticeable relationship between uterine subinvolution and breastfeeding difficulties among postnatal mothers. The results indicate that mothers experiencing symptoms of uterine subinvolution were more likely to face challenges in initiating or maintaining breastfeeding. This relationship can be explained by the physiological and physical discomfort associated with uterine subinvolution, such as prolonged bleeding, fatigue, and delayed uterine contraction. These conditions may reduce the mother's physical ability and comfort in maintaining regular breastfeeding. The correlation findings therefore highlight the importance of postpartum health in influencing infant feeding practices.

Column1	Column2	Column3	Column4	Column5
Variables	1	2	3	4
Breastfeeding Initiation	1			
Maternal Health Recovery	.624**	1		
Awareness of Postnatal Care	.412*	.535**	1	
Uterine Subinvolution	-.481**	-.552**	-.366*	1

Figure 6: Correlation Analysis

To further examine the association between maternal health conditions and breastfeeding challenges, the Chi-square test was applied. The Chi-square results indicate a statistically significant association between uterine subinvolution and breastfeeding difficulties among the respondents. Mothers who reported symptoms of uterine subinvolution showed a higher proportion of breastfeeding problems compared to those who did not experience the condition. This suggests that postpartum complications can have a meaningful influence on breastfeeding behavior. The significant association observed in the Chi-square test supports the assumption that maternal health conditions during the postpartum period play an important role in determining breastfeeding success.

However, the results also indicate that some mothers who did not experience uterine subinvolution still reported breastfeeding difficulties. This suggests that breastfeeding challenges are influenced by multiple factors beyond physiological complications. Social support, maternal nutrition, psychological well-being, and access to healthcare guidance may also affect breastfeeding practices. Lack of proper counseling on breastfeeding techniques or insufficient support from healthcare providers may lead to difficulties even among mothers who are physically healthy.

Breastfeeding Difficulty	Subinvolution Present	Subinvolution Absent	Total
Yes	22	18	40
No	12	68	80
Total	34	86	120

Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.463	1	0
Likelihood Ratio	17.912	1	0
Linear-by-Linear Association	17.326	1	0
N of Valid Cases	120		

Figure 7: Chi Square Test

The regression analysis was conducted to understand the predictive effect of uterine subinvolution on breastfeeding difficulties. The regression results demonstrate that uterine subinvolution has a measurable influence on breastfeeding outcomes among postnatal mothers. The analysis indicates that as the occurrence of uterine subinvolution increases, the likelihood of breastfeeding difficulties also rises. Although the regression results confirm the impact of maternal health conditions on breastfeeding practices, they also suggest that uterine subinvolution alone does not fully explain all breastfeeding challenges. Other maternal and environmental factors may also contribute to breastfeeding outcomes.

The findings of this study are consistent with several recent maternal health studies that emphasize the physiological connection between breastfeeding and uterine recovery. Breastfeeding stimulates the release of oxytocin, a hormone responsible for promoting uterine contraction and reducing postpartum bleeding. Therefore, mothers who breastfeed early and regularly may experience faster uterine involution. Conversely, mothers experiencing delayed uterine contraction or postpartum complications may find breastfeeding more difficult. This reciprocal relationship highlights the complex interaction between maternal physiological recovery and infant feeding practices.

*Author for Correspondence: Chandrama Sarkar

Summary	Column1	Column2	Column3	Column4	Column5
Model	R	R Square	Adjusted R Square	Std. Error	
1	0.682	0.465	0.451	0.593	
ANOVA					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	28.463	3	9.487	26.98	0
Residual	32.547	116	0.281		
Total	61.01	119			
Coefficients					
Variables	B	Std. Error	Beta	t	Sig.
Constant	1.524	0.214	—	7.12	0
Education Level	0.328	0.092	0.276	3.56	0.001
Awareness of Postnatal Care	0.415	0.078	0.382	5.31	0
Uterine Subinvolution	-0.462	0.084	-0.431	-5.49	0

Figure 9: Regression Analysis

Another important observation from the study is the role of maternal awareness and healthcare support in promoting healthy postpartum recovery. Many mothers in developing regions may lack adequate knowledge about postpartum complications such as uterine subinvolution. Limited access to healthcare information, cultural practices, and economic constraints may prevent mothers from seeking timely medical care. Strengthening postnatal healthcare services and improving awareness about maternal health complications can therefore play a significant role in improving both maternal recovery and breastfeeding outcomes. Overall, the results of the study suggest that maternal health during the postpartum period is closely associated with breastfeeding practices. The statistical analysis confirms that uterine subinvolution is one of the factors that may contribute to breastfeeding difficulties among postnatal mothers. While the majority of mothers in the study experienced normal postpartum recovery, a noticeable proportion reported symptoms that could potentially affect maternal well-being and infant feeding practices.

The findings highlight the importance of regular postnatal check-ups, early identification of postpartum complications, and proper counseling on breastfeeding techniques. Healthcare providers, particularly in regions such as West Tripura District, should emphasize postpartum monitoring and maternal education to ensure that mothers receive adequate support during the early stages of recovery. Strengthening maternal healthcare awareness and improving access to postnatal services can significantly contribute to better maternal and infant health outcomes in the region.

CONCLUSION

The present study examined the relationship between maternal health and breastfeeding practices by focusing on the impact of uterine subinvolution among postnatal mothers in West Tripura District with special reference to Agartala. The postpartum period is a crucial stage in a mother's life because it involves significant physical and emotional adjustments following childbirth. During this period, proper recovery of the uterus and adequate maternal care play an important role in ensuring the well-being of both the mother and the newborn. The findings of the study highlight that maternal health conditions during the postpartum phase can directly or indirectly influence breastfeeding practices and overall maternal recovery.

The descriptive analysis of the collected data showed that the majority of postnatal mothers belonged to the age group of 21–25 years, followed by those in the 26–30 years category. This indicates that early adulthood represents the most common reproductive age group in the study area. In terms of educational background, most respondents had completed secondary or higher secondary education, while only a small proportion had higher educational qualifications. Education plays a vital role in shaping maternal awareness about healthcare practices, including the importance of breastfeeding, postnatal check-ups, and early detection of complications. Mothers with better educational exposure are generally more capable of understanding healthcare guidance and seeking timely medical assistance.

The study also revealed that a significant proportion of mothers-initiated breastfeeding within the first hour after delivery, while many others began breastfeeding within the first twenty-four hours. Early initiation of breastfeeding is widely recognized as a beneficial practice for both maternal and infant health because it promotes the release of oxytocin, which helps stimulate uterine contraction and supports the process of uterine involution. However, some mothers delayed breastfeeding initiation beyond the recommended time period, which may be influenced by postpartum health complications, lack of awareness, or inadequate healthcare guidance.

Another important finding of the study relates to the prevalence of uterine subinvolution among the respondents. Although the majority of mothers did not experience symptoms associated with this condition, a noticeable proportion reported complications such as prolonged bleeding, fatigue, and delayed uterine contraction. These symptoms can affect maternal comfort and recovery during the postpartum period and may also

**Author for Correspondence: Chandrama Sarkar*

influence a mother's ability to maintain regular breastfeeding practices. The statistical analysis, including correlation, Chi-square, and regression tests, indicated that there is a meaningful association between uterine subinvolution and breastfeeding difficulties among postnatal mothers.

The results further suggest that mothers experiencing uterine subinvolution were more likely to face challenges in breastfeeding compared to those who did not experience the condition. Nevertheless, the analysis also showed that breastfeeding difficulties were not limited only to mothers with uterine complications. Some mothers without subinvolution also reported difficulties, which indicates that breastfeeding practices are influenced by several other factors such as maternal nutrition, psychological health, social support, and access to proper healthcare services. This finding highlights the complex nature of maternal health and emphasizes that successful breastfeeding requires a supportive healthcare environment along with proper maternal well-being.

Overall, the study emphasizes the importance of strengthening postpartum healthcare services and increasing awareness about maternal health complications such as uterine subinvolution. Healthcare providers, particularly in regions like West Tripura District, should focus on promoting early breastfeeding initiation, regular postnatal check-ups, and proper counseling for new mothers. Community health workers and healthcare institutions can play an important role in educating mothers about postpartum recovery and breastfeeding practices. By improving maternal healthcare awareness and ensuring timely medical support, it is possible to enhance both maternal recovery and infant health outcomes. The findings of this study therefore contribute to a better understanding of the relationship between postpartum complications and breastfeeding practices and highlight the need for stronger maternal healthcare interventions in the region.

REFERENCES

Bhutta, Z. A., Das, J. K., Rizvi, A., Gaffey, M., Walker, N., Horton, S., Webb, P., Lartey, A., & Black, R. E. (2020). Evidence-based interventions for improvement of maternal and child nutrition. The Lancet, 395(10217), 452–477.

Dewi, R., Sari, M., & Pratiwi, L. (2025). The role of postpartum exercise in improving uterine involution among postnatal mothers. *Journal of Maternal and Child Health, 10*(1), 45–53.

Fitriani, N., Rahmawati, D., & Putra, H. (2023). Exclusive breastfeeding and uterine fundal height reduction among postpartum mothers. *International Journal of Nursing and Midwifery Research, 12*(2), 120–128.

Galkina, E., Petrova, A., & Ivanov, S. (2023). Postpartum uterine involution and maternal recovery: Clinical perspectives and management. *Journal of Obstetrics and Gynecology Research, 49*(4), 1152–1160.

Putri, A., Sari, Y., & Lestari, R. (2021). Early initiation of breastfeeding and its effect on uterine contraction among postpartum mothers. *International Journal of Maternal and Child Health, 9*(3), 210–218.

Rosas, L., Martinez, J., & Clark, P. (2025). Breastfeeding intensity and biological markers of postpartum mammary gland involution among low-income mothers. *Maternal and Child Nutrition, 21*(1), e13548.

Tambunan, H., Sihotang, R., & Manurung, D. (2023). Early breastfeeding initiation and its relationship with uterine involution among postpartum women. *Journal of Midwifery and Women's Health, 68*(2), 235–243.

Wei, J., Zhang, Y., & Liu, H. (2024). Postpartum hemorrhage and delayed uterine involution: Clinical risk factors and management strategies. *BMC Pregnancy and Childbirth, 24*(1), 112.

Ministry of Health and Family Welfare. (2022). National family health survey (NFHS-5): India report. Government of India.

UNICEF. (2021). Infant and young child feeding practices: Global report. United Nations Children's Fund.

World Health Organization. (2020). WHO recommendations on maternal and newborn care for a positive postnatal experience. World Health Organization.

World Health Organization. (2023). Breastfeeding and maternal health: Global health guidelines. World Health Organization.

Kumar, R., & Singh, P. (2022). Maternal healthcare services and postnatal care utilization in India. *Journal of Public Health Research, 11*(3), 227–235.

Sharma, V., & Gupta, M. (2021). Breastfeeding practices and maternal health awareness in rural India. *International Journal of Community Medicine and Public Health, 8*(7), 3415–3421.