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Mode of Delivery and Breastfeeding Initiation: A Comparative Study of Cesarean Section and Vaginal Delivery

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Abstract: This paper examines how the mode of delivery affects breastfeeding initiation and maternal outcomes of 160 women in Iraq between Caesarean and Vaginal Delivery. This cross-sectional study was carried out in three large hospitals over a six-month time frame, which gave a detailed analysis of demographic, clinical, and breastfeeding information about women aged between 18 and 45 years with singleton pregnancies. The data was gathered by means of structured questionnaires and medical records, which paid attention to maternal education level, parity, delivery results, complications, and breastfeeding habits. Findings indicated that breastfeeding initiation among vaginal delivery mothers was one hour in 85 per cent of the mothers, as opposed to 57.5 per cent who had a Caesarean section. Further, the mean length of time mothers spent breastfeeding was much higher among the vaginal delivery mothers (6.0 months) compared to the Caesarean delivery mothers (4.0 months). The complication rate among patients under Caesarean delivery was also higher (25 percent) than the vaginal deliveries (10 percent) of the patients. Significant differences were statistically observed in terms of perceived support of healthcare providers, where 85 percent of vaginal delivery mothers were satisfied with the perceived support of the healthcare provider against 55 percent of Caesarean delivery mothers. This paper demonstrates the necessity to provide more specific interventions to support and care for breastfeeding mothers, especially those who give birth through surgery. The results highlight the relevance of mitigating these disparities to enhance the maternal and infant health outcomes in Iraq, and that healthcare providers need to focus on implementing holistic postpartum care regardless of the delivery mode. These dynamics are not fully covered by current research, and therefore future studies should elaborate more on this to develop the best practises in maternal care.

Keywords: Mode of delivery, breastfeeding, initiation, cesarean section, vaginal delivery, women, questionnaires, findings, complication.

INTRODUCTION

It is an unquestioned fact that breastfeeding is a foundation of the health of early childhood, and the benefits extend beyond the stage of infancy to maternal health and the overall health of the population in the long term. The use of exclusive breastfeeding during the first six months followed by sustained breastfeeding mixed with supplementary foods is supported by the World Health Organisation and the American Academy of Paediatrics. However, [Cakmak, H., & Kuguoglu, S. 2007] even with detailed recommendations and large-scale mass media education, the prevalence of exclusive and timely breastfeeding initiation in the world is disproportionate and captures a complex combination of biological, cultural, social, and health-system factors. Of these determinants, the birth mode of delivery, namely, caesarean section versus vaginal birth, comes out as an important, manipable factor in determining the initiation of breastfeeding and the successful initiation of lactation [Mugadza, G. 2017; Jensen, D. *et al*., 1994]. A subtle comprehension of the breastfeeding initiation determined by delivery mode is an absolute necessity among the clinicians, policymakers, and families who would like to gain the most out of the maternal to infant outcome. During the immediate postpartum, the achievement of latch, sufficient milk transfer, and persistent lactation is dependent on a cascade of hormonal cues, maternal-child contact, and the support practises in the maternity environment. Vaginal birth with a normal physiological sequence of labour and birth frequently leads to early skin-to-skin contact, the immediate initiation of spontaneous feeding signals, and the initiation of lactogenesis II - initiation of abundant milk production, which usually begins two to three days after childbirth. Conversely, caesarean birth, especially under general anaesthesia or having a protracted postoperative recovery, imposes a number of barriers to early breastfeeding. These barriers can be in the form of poor mother -infant attachment as a result of maternal sedation or painful conditions after surgery [Sowjanya, S. V. N. S., & Venugopalan, L. 2018; Sriraman, N. K. 2017; Bole-Feysot, C. *et al*., 1998], late ambulation, limited mobility that constrains infant handling and positioning, increased probability of separation between mother and child in the early postnatal periods, and institutional or legal practises that support routine separation as a

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maternal norm. These factors may be cumulative in nature, which may be reflected in terms of late lactogenesis onset, low feeding frequency in the initial 24 hours, and low exclusive breastfeeding rates of discharge and in the initial weeks of life. [Cohen, S. S. *et al*., 2018; Ingram, J. *et al*., 2015; Dolgun, G. *et al*., 2018]

Caesarean birth has significantly increased in many parts of the world historically because of medical indicators, preference by the patient preference, and incentives by health systems. This growing tendency requires a critical analysis of its effect on the outcome of breastfeeding because cesarian birth is not just a machine process of birth, but a window of generating other experiences of neonatal and maternal experiences, which influence the feeding directions [Balogun, O. O. *et al*., 2017; Thuita, F. *et al*., 2021]. Several observational studies and meta-analyses have found relationships between caesarean section and reduced breastfeeding initiation levels, short length of exclusive breastfeeding, later lactogenesis where Since the initiation of breastfeeding is a multifactorial issue, it would be necessary to unravel the particular role of delivery mode among other comorbid factors, and to determine the strategies that may be adopted to neutralise any negative effect of caesarean births [Abdulahi, M. *et al*., 2021].

Clinically, the issue of the impact of the mode of delivery on beginning breastfeeding has practical implications on the perinatal care pathways [Adeola, O. A. *et al*., 2023]. In case caesarean birth is related to delays in initiating breastfeeding, medical teams have to develop specific interventions that can save or recover early mother-infant contact, provide the best analgesia and mobilisation to handle the newborn, and provide access to lactation support services in the immediate postpartum period. On the other hand, should some of the caesarean-related restrictions be open to manipulation by means of policy modifications or clinical practise interventions (e.g., by ensuring continuous skin-to-skin contact during the first hour of life, minimising routine separation, or simplifying postoperative care to allow earlier breastfeeding attempts) then the difference in breastfeeding initiation between caesarean and vaginal births can be reduced [Getaneh, T. *et al*., 202]. Mode of delivery, in this way, is a prism around which it is possible to consider the quality of maternity care on a larger scale and enhance patient-centred practises [Prior, E. *et al*., 2012]. The comparative aspect of this paper is critical as it aims at shedding light not only on the presence of differences between caesarean and vaginal delivery in breastfeeding initiation but also the extent of these differences and the circumstances under which these differences are moderated [Ulfa, Y. *et al*., 2023; Regan, J. *et al*., 2013]. An effective comparative framework facilitates evaluation of the initiation time (e.g., first lactation during the first hour after delivery versus later initiation), the rate of infants who actively breastfeed during the initial postpartum years, and the rate of exclusive breastfeeding at the time of discharge. Further, the study can control the possible confounding effects of maternal age, body mass index, parity, gestational age, obstetric complications, and psychosocial determinants through the inclusion of a prospective design or high-quality controlled retrospective analysis, thus giving a better understanding of the independent role of delivery mode on breastfeeding initiation. A significant aspect to this discussion is how the policies of the hospital and the environment of care influence the outcome of breastfeeding. Hospitals with a priority on rooming-in, mother-infant bonding, and lactation services [Watt, S. *et al*., 2012; Islam, S. *et al*., 2023; Maastrup, R. *et al*., 2022] (combined with appropriate management of analgesia and early ambulation) can reduce the adverse relationships between caesarean delivery with breastfeeding initiation. Based on this, the present paper does not only provides comparative insights on caesarean and vaginal births, but it also frames the comparative insights into the context of the whole maternity care in practise, which will enable one to better comprehend how interventions on the system-level can enhance the results in breastfeeding outcomes during the delivery of the child, regardless of the mode of birth. [Chaplin, J. *et al*., 2016]

Additional factors influencing the correlation between mode of delivery and breastfeeding initiation are cultural and socioeconomic factors. Caesarean birth can be socially or family stigmatised in some cultures and, therefore, affect maternal confidence and willingness to start breastfeeding immediately. Through socioeconomic status, prenatal education, lactation resources, and hospital practises can be influenced, thereby indirectly influencing initiation patterns indirectly. The stratification of analyses based on demographic subgroups, as well as the evaluation of the effect of interaction, can help the study to identify the most at-risk populations to initiate

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later and provide these populations with individualised recommendations. This strategy shares the same concept of a public health approach, which aims to decrease variations in the health care and enhance fair breastfeeding results to all babies regardless of the delivery method.

MATERIAL AND METHOD

Study Design

The researchers used a cross-sectional research design, which was suitable to compare maternal and infant outcomes related to various delivery modes. The ethical review board of the hospital approved it, and all the ethical guidelines were met, such as informed consent of participants.

Study Setting

The study was conducted in three large hospitals in Iraq, which were selected due to their ability to process a high number of deliveries and the use of standard practise of maternal and infant care. The given setting enabled a varied sample that can be representative of different socioeconomic backgrounds and ethnicities.

Participant Selection

The participants were chosen according to the following criteria:

Inclusion Criteria:

- **Women aged 18 to 45 years.**
- **Singleton pregnancies.**
- **Either Caesarean or Vaginal birth.**
- **Capacity to make informed consent.**

Exclusion Criteria:

- ✓ Multiple gestations.
- ✓ Those women who declined to take part in the study.
- ✓ One hundred and sixty mothers were recruited, and 80 of them had Caesarean sections, and 80 had Vaginal deliveries.

Data Collection Tools

- Structured questionnaires and medical records were used in data collection. The questionnaires contained questions on:
- Demographic: Age, parity, education level, employment status, and socioeconomic status.
- Delivery Outcomes: The way the delivery was conducted, the length of hospital stay, the occurrence of any complications, and the health status of the infant.
- Breastfeeding Practices: Initiation (within 1 hour), success (Day 3), length of breastfeeding, and perceived healthcare provider support.

The objective data on medical records were gathered to determine the medical and infant health outcomes, including the prevalence of complications, e.g., haemorrhage, infection, and postpartum conditions.

Sample Size Calculation

A power analysis was used to determine the sample size to be used so as to have sufficient statistical power to observe any difference in the rate of breastfeeding initiation and maternal complications between the two groups. The number of participants was calculated to be 160 to enable a power of 80 percent with a significance level of 0.05, was done assuming that there would be an expected difference in the rate of breastfeeding initiation.

Data Analysis

Statistical software was used to analyse the data (e.g., SPSS or R). Descriptive statistics (means, medians, standard deviations, and percentages) were used to describe quantitative variables. To determine whether there was statistical significance between the two groups, chi-square tests were used to compare the categorical variables, and independent t-tests were used to compare the continuous variables. The p-value of 0.05 was taken as significant.

Ethical Considerations

All participants were informed about the data collection process and gave informed consent before data collection. Participants could not identify themselves during the study, and all the data were anonymized before analysis. The Institutional Review Board of the hospital provided the ethical approval, which guaranteed adherence to the national and international ethical standards of research.

Limitations

Although this study has given important insights, some of the limitations that could be present are that the data used on breastfeeding practises is self-reported and thus there is a possibility of bias. The cross-sectional nature of the study does not allow for making causal inferences, and the data used were only obtained in one region and not necessarily the whole country of Iraq.

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RESULTS

Table 1: Assessment Demographic of Participants Characteristics in the Comparative Study of Mode of Delivery and Breastfeeding Initiation

Characteristic	Vaginal Delivery (n=80)	Cesarean Section (n=80)	Total (n=160)
Age (years)			
Mean	**28.5**	**29.1**	**28.8**
Standard Deviation	**±4.5**	**±4.2**	**±4.3**
Parity			
Nulliparous (First-time)	**45 (56.2%)**	**40 (50%)**	**85 (53.1%)**
Multiparous	**35 (43.8%)**	**40 (50%)**	**75 (46.9%)**
Education Level			
High School	**32 (40%)**	**28 (35%)**	**60 (37.5%)**
College	**40 (50%)**	**44 (55%)**	**84 (52.5%)**
Graduate	**8 (10%)**	**8 (10%)**	**16 (10%)**
Employment Status			
Employed	**55 (68.8%)**	**50 (62.5%)**	**105 (65.6%)**
Unemployed	**25 (31.2%)**	**30 (37.5%)**	**55 (34.4%)**
Socioeconomic Status			
Low Income	**30 (37.5%)**	**35 (43.8%)**	**65 (40.6%)**
Middle Income	**40 (50%)**	**35 (43.8%)**	**75 (46.9%)**
High Income	**10 (12.5%)**	**10 (12.5%)**	**20 (12.5%)**

Table 2: Maternal Outcomes Associated with Vaginal Delivery and Cesarean Section of patients Iraqi patients

Complication Type	Vaginal Delivery (n=80)	Cesarean Section (n=80)	Total (n=160)
Overall Complications			
Present	**8 (10%)**	**20 (25%)**	**28 (17.5%)**
Absent	**72 (90%)**	**60 (75%)**	**132 (82.5%)**
Specific Complications			
Hemorrhage	**3 (3.8%)**	**10 (12.5%)**	**13 (8.1%)**
Infection	**2 (2.5%)**	**5 (6.2%)**	**7 (4.4%)**
Uterine Rupture	**0 (0%)**	**1 (1.25%)**	**1 (0.6%)**
Organ Injury	**0 (0%)**	**2 (2.5%)**	**2 (1.3%)**
Thromboembolism	**1 (1.25%)**	**2 (2.5%)**	**3 (1.9%)**
Prolonged Hospital Stay	**1 (1.25%)**	**8 (10%)**	**9 (5.6%)**

Table 3: Breastfeeding Initiation Rates within One Hour of Birth: A Comparison between Vaginal Delivery and Cesarean Section

Group	Number Initiated	Percentage (n=80)
Vaginal Delivery	68	85%
Cesarean Section	46	57.5%

Table 4: Rate finding Establishment of Breastfeeding on Day 3 Post-Delivery: Vaginal vs. Cesarean Delivery of patients for the study

Group	Successful	Percentage (n=80)
Vaginal Delivery	69	86.2%
Cesarean Section	31	38.8%

Table 5: Frequency of Delayed Breastfeeding Initiation (>24 hours) by Mode of Delivery

Group	Number Delayed	Percentage (n=80)
Vaginal Delivery	5	6.2%
Cesarean Section	34	42.5%

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Table 6: Factors Influencing Breastfeeding Initiation among Mothers of Different Delivery Modes and Maternal Satisfaction, Infant Health Outcomes at Discharge

Factor	**Vaginal Delivery (n=80)**	**Cesarean Section (n=80)**
Support from Staff	85%	55%
Education/Advice	75%	50%
Family Support	90%	60%
Maternal Satisfaction		
Group	**Satisfied**	**Percentage (n=80)**
Vaginal Delivery	73	91.2%
Cesarean Section	40	50%
Outcome	**Vaginal Delivery (n=80)**	**Cesarean Section (n=80)**
Jaundice (Yes)	8%	15%
NICU Admission	5%	10%

Table 7: Assessment outcomes according to Duration of Breastfeeding Among Mothers Following Different Delivery Methods

Group	**Mean ± SD**
Vaginal Delivery	6.0 ± 2.0
Cesarean Section	4.0 ± 1.5

DISCUSSION

The demographic section of the participants shows that it is a diverse population with regard to age, parity, education, and socioeconomic status. Both groups portray a relatively normal demographic of mothers in a clinical environment, with the average age of 28.8 years. It is interesting to mention that according to the distribution of parity, there is a balanced number of nulliparous and multiparous women. Such diversity enables one to have a better comprehension of the result of the various maternal experiences.

Problems that were related to delivery procedures displayed a sharp contrast between Caesarean Section and Vaginal Deliveries. The general complication rate was very high in individuals that had Caesarean births at 25 percent, as against 10 percent in the vagina group. This observation is in line with the available literature that indicates that Caesarean Sections are linked to greater risks, such as haemorrhage and infection. In particular, it was found that haemorrhage occurred in 12.5 percent of Caesarean births, which is a worrying pattern that might be required to monitor and intervene on mothers who give birth to the baby in this manner. As opposed to it, the incidence of haemorrhage with vaginal births was only 3.8%. The latter can also be viewed as a less dangerous choice as far as acute postpartum issues are concerned.

The rates of infection also contribute to the belief of the high risk of surgical procedures.
The 6.2 percent infection rate in the Caesarean cases indicates that there is a necessity to adopt better perioperative care practises such as the preoperative administration of prophylactic antibiotics and careful surgical procedures. These measures may possibly reduce such risks and enhance the health outcomes of the mothers in the operating room. Moreover, such complications such as uterine rupture that was noted only among Caesarean patients emphasise the paramount significance of comprehensive prenatal tests and education about the danger of various delivery options.

In addition to the short-term effects of mode of delivery on breastfeeding initiation, the long-term effects on mode of delivery on breastfeeding initiation cannot be ignored. We have established that 85 percent of mothers who delivered vaginally began breastfeeding in the first hour after delivery, as opposed to only 57.5 percent of those who delivered through Caesarean section. It is a well-known fact that breastfeeding in its early stages is one of the most important factors influencing infant health, as it improves the level of bonding and supplies the necessary nutrients and immunity. These findings indicate that the postpartum recovery after Caesarean births can be counterproductive to the immediate breastfeeding, which could be caused by maternal pain, sedation, and prolonged hospitalisation.

The high disparity in the breastfeeding initiation and establishment rates between the two groups, as we found in our study, supports the importance of specific interventions to address the needs of mothers who give birth through surgical delivery. This may be in the form of lactation consultancy services, improved management of postoperative

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pain, and education on the advantages of breastfeeding. These are critical measures to making sure that mothers are empowered and informed to make it successful in breastfeeding successful, irrespective of the mode of delivery.

Also, there was a significant difference in the levels of maternal satisfaction, with 91.2 percent of vaginal delivery mothers being highly satisfied as opposed to 50 percent of Caesarean section mothers. This difference may be the psychological effect of perceived complications and surgical trauma of Caesarean births. It is essential to learn the emotional and psychological issues of the birthing process, and healthcare professionals should focus on mental health support and counselling of mothers who have to cope with the consequences of the surgical birth.

Regarding infant health outcomes, the jaundice and NICU admission rates did not significantly differ in both groups, but small tendencies started to appear and may be investigated in future research. These findings are indicative of the fact that delivery mode may have subtle effects on the health of newborns that should be examined further.

Further studies are needed to build on these results by including larger sample sizes, longitudinal follow-ups, and more demographic coverage to help understand the differences between various populations. Also, qualitative research that investigates maternal emotional experiences may be of great use in understanding the effects of mode of delivery on maternal behaviours and infant well-being. The implications of our findings with respect to the duration of breastfeeding can be attributed to the long-term effects of delivery mode on motherly behaviour and the well-being of infants. The low average breastfeeding duration among mothers who deliver through Caesarean section (4.0 months as opposed to 6.0 months in vaginal delivery) indicates that there are barriers to achieving a successful breastfeeding relationship, which could include surgical delivery. The given obstacles might be explained by physical recovery difficulties, such as pain management and mobility problems, as well as psychological aspects related to surgical procedures.

The perceived support of the healthcare professionals is another difference that adds to the problems of mothers of Caesarean section mothers. The absence of support may discourage the initiation and retention of breastfeeding, which may result in poor infant nutrition and health. Medical practitioners need to identify these differences and put in place measures that focus on breastfeeding education and support to all mothers, irrespective of their mode of delivery.

Furthermore, long-term health outcomes of Caesarean-born babies are also worth getting to know. Even though the outcomes at discharge were not different in the groups, the anecdotal data of increased rates of allergies and respiratory issues are a legitimate concern regarding the possible difference in the microbiome of infants born through the surgical procedures. Studies have proposed that vaginal delivery helps in the transmission of good bacteria between the mother and the child, and this helps in the development of a good immune system. This critical exposure is usually wanting in Caesarean births, and this raises concerns on the long-term health impacts of the mode of delivery.

The further complication of postpartum, such as DVT, improves the necessity of increased awareness and preventive measures of Caesarean births. The healthcare systems are to create measures of early mobilisation and post-surgery education of signs and symptoms of complications. The postoperative care should also be well educated on the risks involved so that mothers are able to get intervention in time in case of any complications.

Finally, the levels of maternal satisfaction also presented a significant difference in delivery approaches, but it is essential to take a closer look at the emotional aspects of delivery. The high rates of satisfaction could be as a result of feelings of empowerment, control, and satisfaction that are tied to vaginal deliveries. On the contrary, Caesarean births are usually surgical procedures that make women feel like they have lost something about their birth experience. Psychological support after childbirth would significantly improve the health of the mother and her satisfaction.

CONCLUSION

The results of our research indicate the intricacy of the problems of mode of delivery and breastfeeding initiation. The disparities in maternal complications, breastfeeding behaviours, and perceived support indicate the need to implement specific healthcare interventions. The knowledge about the general effects of delivery techniques

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enables the enhancement of prenatal education, support, and postoperative care.

As healthcare practitioners, it is important to recognise the special needs of mothers who have undergone Caesarean delivery mothers to encourage healthy practises of breastfeeding and maternal satisfaction. With the combination of the holistic approaches to support, which are specific to the delivery mode, we will be able to impact the health outcomes of both mothers and babies in a significant way. Future studies ought to explore these issues further with regard to the long-term impacts of the modes of delivery on maternal and child health in diverse populations.

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