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Impact of Breastfeeding on Survival of Neonates Admitted in Neonatal Intensive Care Unit, Federal Medical Centre, Asaba, Delta State, Nigeria

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ABSTRACT

Breastfeeding is defined as the process of feeding an infant or young child with milk from mother breast. The purpose of this research work is to determine the impact of breastfeeding on Survival of Neonates in Neonatal Intensive Care Unit of Federal Medical Centre Asaba Delta State from January 2024 to December 2024. The population of the study consist of a target 254 case folders of neonates admitted in NICU from January 2024 to December 2024. The instrument used for data collection was researcher developed proforma and data was analyzed using frequency distribution percentages and tables. The findings show that exclusive breastfeeding remains one of the most powerful, affordable, and evidence-based strategies for improving neonatal survival and reducing morbidity in hospital settings. The findings shows the survival rate among exclusively breastfed neonates was remarkably high at 95.3 percent, compared to 87.1 percent among mixed-fed neonates and 80.4 percent among those who were formula-fed. The major barriers identified include Maternal illness or postpartum complications (19%), Poor lactation support and counseling (17.5%), Mother–baby separation due to NICU restrictions (15.9%). These factors highlight systemic, institutional, and psychosocial issues limiting breastfeeding success. Complications were least among exclusively breastfed neonates (13.3%), moderate among mixed-fed (35.7%), and highest among formulafed (53.6%). Exclusive breastfeeding substantially reduced the incidence of diarrhoea, NEC, and respiratory infections, consistent with global neonatal health research. It is recommended that Hospitals should create breastfeeding support centres within the NICU, staffed by trained lactation consultants and nurses to provide daily guidance and psychological encouragement to mothers.

Keywords: *Exclusive Breastfeeding, Neonatal Survival, NICU, Neonatal Mortality, FMC Asaba*

INTRODUCTION

Breastfeeding has been a fundamental practice in human societies for millennia, providing infants with essential nutrients and immunological protection during the critical early stages of life. Exclusive breastfeeding is considered a cornerstone of infants and maternal health, with the World Health Organization (WHO) and the American Academy of Pediatrics (APP) endorsing it as the optimal method of infant feeding. The neonatal period (first 28 days) is the most vulnerable time in a child's life. In 2023, an estimated 2.3 million newborns died worldwide—about 6,300 deaths daily—with most deaths from preventable causes such as prematurity, intrapartum complications, and infections. Improving early nutrition and infection protection is therefore central to reducing neonatal mortality. Breastfeeding—especially early initiation and exclusive breastfeeding—is one of the highest-impact, low-cost interventions available to health systems (UNICEF, 2023).

Human milk is not only nutritionally complete; it is also biologically active, containing secretory IgA, lactoferrin, lysozyme, human milk oligosaccharides, cytokines and living cells that enhance mucosal immunity, shape the microbiome, and reduce infection risks in early life. The protection is dose-responsive, with exclusive breastfeeding conferring the greatest survival benefit compared with partial or non-breastfeeding (WHO, 2023). Early initiation of breastfeeding (EIBF)—within the first hour after birth—reduces neonatal mortality; meta-analytic evidence shows that starting after the first hour roughly doubles

the risk of death in the first month (pooled OR ≈ 2.02), highlighting the critical role of colostrum, thermoregulation through skin-to-skin contact, and early physiologic stabilization (Shrimpton, 2017).

Preterm and very/low-birth-weight infants—human milk is especially protective. A 2024 evidence update concludes that when mother's own milk is unavailable, donor human milk (vs formula) cuts the risk of necrotizing enterocolitis (NEC) by about half in very preterm or VLBW infants, supporting milk-banking and human-milk-based nutrition policies in NICUs (Maria Quigley et al, 2024). Despite the evidence, breastfeeding is often undermined by structural barriers, including aggressive formula marketing, limited paid leave, and inconsistent clinical/lactation support. The 2023 Lancet Breastfeeding Series documents how commercial milk-formula (CMF) marketing reshapes beliefs and practices and calls for stronger policy safeguards alongside health-system investments (Perez.E, 2023).

Statement of the Problem

Breastfeeding remains one of the most critical interventions in ensuring neonatal survival and healthy growth, especially among high-risk newborns admitted to Neonatal Intensive Care Units (NICUs). Despite global and national efforts to promote optimal breastfeeding practices, neonatal morbidity and mortality rates remain high in many developing regions, including Nigeria. According to the World Health Organization (WHO, 2023), about 2.4 million neonatal deaths occur globally each year, with Sub-Saharan Africa accounting for the highest burden. A significant proportion of these deaths are associated with preventable causes such as infections, prematurity, and malnutrition—conditions that can be mitigated through early initiation and exclusive breastfeeding.

In Nigeria, neonatal mortality remains a pressing public health issue. The Nigeria Demographic and Health Survey (NDHS, 2023) reported a neonatal mortality rate of 33 deaths per 1,000 live births, with low breastfeeding rates contributing substantially to these outcomes. Evidence suggests that breast milk provides immunological, nutritional, and developmental benefits that enhance neonatal resilience against infections and other complications common in NICUs. However, in many tertiary health facilities, including the Federal Medical Centre (FMC) Asaba, challenges such as delayed initiation of breastfeeding, inadequate lactation support, maternal health complications, and sociocultural misconceptions often hinder effective breastfeeding practices.

Objectives to the Study

To determine the impact of breastfeeding on the survival of neonates admitted to the NICU of Federal Medical Centre Asaba from Jan 2024 to Dec 2024.

Specific Objectives:

1. To determine the survival rate of neonates who are breastfed versus those who are not.
2. To identify barriers to effective breastfeeding in the NICU of Federal Medical Centre Asaba.

LITERATURE REVIEW

Concept of breastfeeding

Breastfeeding is a basic human activity, vital to infant and maternal health and of immense economic value to households and societies. Breastfeeding has been recognized as the optimum way to nurture, in view of this, the World Health Organization recommends that infant or young children, It has proved to be the most cost effective health promoting, and disease preventing activity mothers can do because it is pivotal to infant growth, development, immunization and child spacing. During the first year of life, infant undergo rapid rate of growth and development that is unsurpassed at any other period in their lives. Infants should be exclusively breast feed for first 4-6 months and weaning should occur in the second year of life in disadvantaged societies even in to the third year of life.

Breastfeeding is defined as the process of feeding an infant or young child with milk from mother breast .Babies have a sucking urge that enables them to take in milk. Provided there is a good latch a normal frenulum and milk supply. Practice of breast feeding is an important role in determining nutritional status, growth and development, imprinting physiological and metabolic mechanisms that lower the risk for infectious diseases and overweight/obesity- associated co-morbidities. Optimal breastfeeding for the first two years of life is the single most effective intervention to prevent child deaths worldwide. It can also be one of the most cost-effective interventions to improve child health. Recently, early initiation of

breastfeeding was ranked as the most equitable maternal, newborn, and child health intervention, with the greatest potential to reach families of all economic backgrounds. Policymakers, program leaders, and healthcare providers have clear and specific actions that they can take to protect, promote, and support optimal breastfeeding practices. By doing so, we can help improve a child's future growth, development, educational achievement, and even economic status. When mothers have the support and resources they need to make the best feeding choices, countries get the human resources they need for a prosperous future (UNICEF, 2022).

World Health Organization (WHO) and United Nations Children's Fund (UNICEF) defines Exclusive breastfeeding as the process by which the infant has received only breast milk from the mother or a wet nurse or expressed breast milk and no other liquid or solids with the exception of drops or syrups consisting of vitamins, minerals supplement or medicines. In other words, it means that the infant receives only breast milk and no other liquids or solids are given not even water with the exception of oral rehydration solution or drops/syrup of vitamins, minerals or medicines.

Breastfeeding is an unequal way of providing ideal food for the healthy growth and development of infants. It is also an integral part of reproductive process with important implications for the health of mothers. Review of evidence has shown that on a population basis, exclusive breastfeeding for 6 months is the optimal way of feeding infants. Thereafter infants should receive complimentary foods with continued breastfeeding up to 2 years of age or beyond (WHO, 2020). While breastfeeding is a natural act, it is also a learned behavior. An extensive body of research has demonstrated that mothers and care givers require active support for establishing and sustaining appreciate breastfeeding practices. WHO and UNICEF launched the Baby-Friendly Hospital Initiative (BFHI) in 1992 to strengthen maternity practices to support breastfeeding. The foundation for the BFHI are the ten steps to successful breastfeeding described in protecting, promoting and supporting breastfeeding. Among the steps are; initiation of breastfeeding within the first one hour of birth, exclusive breastfeeding that is given to newborn infants no food or drink other than breast milk, unless medically indicated; breastfeeding on demand - that is as often as the child wants, day & night, given no artificial teats or pacifiers(also called dummies or soothers) to breastfeeding infants.

Infant Health Benefits of Exclusive Breastfeeding

Exclusive Breastfeeding has been consistently associated with a myriad of health benefits, offering a solid foundation for their growth and development

1. Nutritional Benefits:

Immune System Support: Breast milk serves as a rich source of antibodies, immunoglobulins, and other immune-enhancing factors. These components provide infants with passive immunity against a variety of infections and diseases, protecting them during a vulnerable period. Colostrum is particularly high in immunoglobulins, helping to establish the infant's immune defenses (Donald k., et al. 2022).

2. Optimal Growth and Development: The nutritional composition of breast milk evolves to meet the changing needs of the infant. It contains an ideal balance of macronutrients—carbohydrates, proteins, and fats—adapted to the infant's growth trajectory. Additionally, breast milk is easily digestible, reducing the risk of gastrointestinal disturbances, (Zhang et al., 2021).

3. Immunological Advantages:

Passive Immunity: The transfer of antibodies from the mother to the infant via breast milk helps protect against common childhood illnesses such as respiratory infections, gastroenteritis, and otitis media, (Golan et al., 2023).

Reduced Risk of Infections: Studies have consistently demonstrated that infants exclusively breastfed for six months have fewer respiratory tract infections, gastrointestinal infections, and ear infections compared to those who are not exclusively breastfed. This reduced incidence of infections contributes to lower healthcare costs and improved infant well-being, (American Academy of pediatrics, 2025).

4. Cognitive and Neurodevelopmental Advantages:

Enhanced Cognitive Development: Exclusive breastfeeding has been associated with improved cognitive development, including higher IQ scores in childhood. The precise mechanisms underlying this effect are still under investigation, but it is believed that the fatty acids found in breast milk, such as docosahexaenoic acid (DHA), play a significant role in brain development, (Goldstein et al., 2025).

Improved Neurological Outcomes: Some studies suggest that exclusive breastfeeding may reduce the risk of neurodevelopmental disorders, (Zhang et al., 2024). While further research is needed to establish causation, the neuroprotective properties of breast milk are an intriguing area of investigation.

5. Reduced Risk of Chronic Diseases:

Lower Risk of Obesity: Infants exclusively breastfed for the first six months have a reduced risk of childhood obesity. Breast milk regulates appetite and helps infants develop healthy eating patterns, potentially reducing the likelihood of overeating later in life, (Liu et al., 2025).

Reduced Allergies and Asthma: Exclusive breastfeeding has been linked to a lower risk of allergies, eczema, and asthma in childhood. The immune-boosting properties of breast milk may help modulate the infant's immune response and reduce hypersensitivity to allergens, (Xue et al., 2021).

Lower Risk of Diabetes: Some studies suggest that exclusive breastfeeding may be associated with a decreased risk of type 1 and type 2 diabetes later in life. Breast milk's impact on the developing gut microbiome and its potential role in regulating insulin sensitivity are areas of active research, (Filardi et al., 2025).

6. Enhanced Bonding and Emotional Development:

Breastfeeding fosters a unique and intimate bond between mother and infant. Physical closeness, eye contact, and skin-to-skin contact during breastfeeding contribute to emotional development and secure attachment, which are crucial for the infant's overall well-being, (Pena-Ruiz et al., 2023). Exclusive breastfeeding offers infants a plethora of health benefits, ranging from optimal nutrition and immune system support to enhanced cognitive and neurodevelopmental outcomes. These advantages underscore the critical importance of exclusive breastfeeding as a foundational element of infant care and public health.

Maternal Benefits of Exclusive Breastfeeding

The benefits of exclusive breastfeeding extend beyond the infant, providing numerous advantages for mothers as well. Maternal health benefits encompass both short-term and long-term outcomes, contributing to the overall well-being of mothers.

1. Postpartum Weight Loss and Uterine Contraction:

Weight Loss: Exclusive breastfeeding supports postpartum weight loss. Mothers who breastfeed burn additional calories daily to produce milk, aiding in the gradual shedding of pregnancy weight, (Ohman, E.A., et al. 2024). This can help mothers return to their pre-pregnancy weight more efficiently.

Uterine Contraction: Breastfeeding stimulates the release of oxytocin, which causes uterine contractions. These contractions help the uterus return to its pre-pregnancy size more quickly, reducing the risk of postpartum hemorrhage and promoting overall uterine health, (Oberfichtner, K., 2023).

2. Reduced Risk of Maternal Health Issues:

Breast Cancer: Research suggests that mothers who breastfeed have a lower risk of breast cancer later in life. Prolonged breastfeeding may have a dose-dependent relationship with decreased breast cancer risk, offering long-term health protection, (B.Stordal. 2022).

Ovarian Cancer: Exclusive breastfeeding has also been associated with a reduced risk of ovarian cancer. The protective effect may be linked to the suppression of ovulation during breastfeeding, reducing exposure to ovarian carcinogens, (E I Obeagu. 2024).

Type 2 Diabetes: Mothers who exclusively breastfeed are less likely to develop type 2 diabetes. Breastfeeding enhances maternal insulin sensitivity, potentially decreasing the risk of developing diabetes in the years following childbirth, (T Filardi. 2025)., (Eades, C., et al. 2024).

3. Psychological and Emotional Benefits:

Bonding and Attachment: Breastfeeding promotes a strong emotional bond between mother and infant. The intimate contact, eye contact, and physical closeness during breastfeeding foster secure attachment, benefiting both mother and child, (Modak, A., et al. 2023).

Reduced Postpartum Depression: Exclusive breastfeeding may reduce the risk of postpartum depression. The release of oxytocin during breastfeeding promotes feelings of well-being and relaxation, potentially mitigating the risk of depressive symptoms, (Kim, C.Y., et al. 2025).

Successfully breastfeeding exclusively can boost a mother's confidence and self-efficacy as a caregiver. This sense of accomplishment can positively impact her overall emotional well-being.

4. Economic Advantages:

Breastfeeding exclusively can lead to significant cost savings for mothers. Formula feeding can be expensive, and breastfeeding eliminates the need to purchase formula, bottles, and sterilization equipment. It also reduces medical costs by lowering the incidence of infant illnesses, (Jegier, B.J., et al. 2024).

Fewer Sick Days: Mothers who breastfeed exclusively may need to take fewer sick days to care for a sick infant. Breastfed infants are less prone to infections, resulting in fewer missed workdays for employed (Business/workplace sources and reviews).

Challenges and Barriers to Exclusive Breastfeeding

While exclusive breastfeeding offers numerous benefits, several challenges and barriers can impede its adoption and continuation. Understanding these obstacles is crucial for developing effective strategies to promote and support exclusive breastfeeding.

1. Cultural and Societal Factors:

Cultural Norms: Cultural beliefs and practices around infant feeding can significantly influence a mother's decision to exclusively breastfeed. In some cultures, formula feeding may be considered more socially acceptable or even preferable to breastfeeding.(Black mothers qualitative, 2024-5).

Lack of Family Support: The support and encouragement of family members, particularly partners and extended family, are critical for successful breastfeeding. Mothers who lack support from their families may find it challenging to sustain exclusive breastfeeding, (Patil et Al., 2020).

Workplace and Employment Pressures: Societal expectations and workplace demands can make it difficult for mothers to exclusively breastfeed. The need to return to work shortly after childbirth can limit the time available for breastfeeding and expressing milk, (Patil et Al., 2020).

2. Maternal Health Issues:

Medical Conditions: Some mothers may have medical conditions that make breastfeeding difficult or contraindicated. Conditions such as HIV, active tuberculosis, or certain medications may necessitate alternative feeding methods, (Patil et al., 2020).

Breastfeeding Difficulties: Some women may experience physical challenges, such as inverted nipples or insufficient milk supply that can hinder successful breastfeeding, (Feldman-Winter et al., 2020). These issues may require additional support and intervention.

3. Lack of Education and Information:

Limited Knowledge: Mothers who lack information about the benefits of breastfeeding or who receive conflicting advice may be less likely to initiate or continue exclusive breastfeeding, (East Africa review, 2020).

Misconceptions: Misconceptions about breastfeeding, such as concerns about insufficient milk supply or the belief that formula is equivalent or superior, can deter mothers from exclusively breastfeeding, (Nsiah-Asamoah et al., 2020).

RESEARCH METHOD

Retrospective design was used to assess the impact of breastfeeding on the survival of neonates admitted to the NICU of Federal Medical Centre Asaba Delta State. This design was appropriate because a retrospective study looks backwards and examines exposures to suspected risk or protective factors in relation to an outcome that is established at the start of the study. The study population consisted of all neonates admitted to the NICU of FMC Asaba between Jan 2024 to Dec 2024(0–28 days old), irrespective of gender, birth weight, or gestational age. All the case folders of neonates delivered between Jan 2024 to Dec 2024(0-28 days) admitted into the Neonatal Intensive care unit Federal Medical Centre Asaba was considered . All the case folders were used because the sample size was small in size and the case folders were easily accessible in the Neonatal Intensive care unit. The instrument that was used for data collection was a researcher developed proforma. A proforma is a document designed by the researcher to be unilaterally applied as a method for collecting data. This guided the researcher on information to obtain from the records in NICU of federal medical centre Asaba, Delta State. Data was analysed using descriptive statistics which include frequency and percentage.

RESULTS AND DISCUSSION

Presentation of Results

Table 1: Monthly Distribution of Neonates in NICU (January–December 2024)

| Month | Number of Neonates (n) | Percentage (%) |
|----------|------------------------|----------------|
| January | 20 | 7.9 |
| February | 21 | 8.3 |
| March | 22 | 8.7 |
| April | 23 | 9.1 |
| May | 20 | 7.9 |
| June | 21 | 8.3 |
| July | 22 | 8.7 |
| August | 26 | 10.2 |

| | | |
|--------------|------------|------------|
| September | 22 | 8.7 |
| October | 21 | 8.3 |
| November | 18 | 7.1 |
| December | 18 | 7.1 |
| Total | 254 | 100 |

Source: NICU Records, FMC Asaba (2024).

Interpretation:

The table 1 above shows the monthly distribution of neonates in NICU from January 2024 to December 2024 in relation to the months , the sum and percentage for the year. A total of 254 neonates were admitted to the NICU within the one-year period.The number of neonates admitted at the end of January was 20(7.9%) neonates, 21(8.3%) neonates were admitted in February,22(8.7%) neonates were admitted in March, 23(9.1%) neonates were admitted in April, 20(7.9%) neonates were admitted in May, 21(8.3%) neonates were admitted in June, 22(8.7%) neonates were admitted in July, 26(10.2%) neonates were admitted in August, 22(8.7%) neonates were admitted in September, 21(8.3%) neonates were admitted in October, 18(7.1%) neonates were admitted in November and 18(7.1%) neonates were admitted in December.The month of August recorded the highest admissions (10.2%), while November and December had the least (7.1%). This shows that neonatal admissions in FMC Asaba are fairly consistent throughout the year with slight variations that may correspond with seasonal birth patterns and infection trends.

Table 2: Demographic Characteristics of Neonates

| Variable | Category | Frequency (n=254) | Percentage (%) |
|------------------|----------------------------|-------------------|----------------|
| Sex | Male | 136 | 53.5 |
| | Female | 118 | 46.5 |
| Gestational Age | <37 weeks (Preterm) | 89 | 35.0 |
| | ≥37 weeks (Term) | 165 | 65.0 |
| Birth Weight | <2.5 kg (Low Birth Weight) | 96 | 37.8 |
| | ≥2.5 kg (Normal Weight) | 158 | 62.2 |
| Mode of Delivery | Vaginal | 168 | 66.1 |
| | Caesarean Section | 86 | 33.9 |

Interpretation:

Table 2 shows the distribution of the demographic characteristics of neonates admitted in NICU from January to December 2024. Majority of the neonates were term (65%) and had normal birth weights (62.2%). Males (53.5%) slightly outnumbered females (46.5%). Vaginal delivery (66.1%) was the more common mode of delivery.

Table 3: Feeding Methods of Neonates

| Feeding Method | Frequency (n) | Percentage (%) |
|-------------------------|---------------|----------------|
| Exclusive Breastfeeding | 128 | 50.4 |
| Mixed Feeding | 70 | 27.6 |

| | | |
|-----------------|------------|------------|
| Formula Feeding | 56 | 22.0 |
| Total | 254 | 100 |

Interpretation:

Table 3 shows the distribution of feeding Methods of neonates admitted in NICU from January to December 2024. This indicate that exclusive breastfeeding (50.4%) was the predominant feeding method. This positive finding suggests an improved adherence to the Baby-Friendly Hospital Initiative (BFHI) policy in FMC Asaba, showing better maternal education and NICU support for breastfeeding.

Research Question 1: is there a significant difference in survival rates between breastfed and non-breastfed neonates in NICU of FMC Asaba?

Table 4: Neonatal Survival Outcomes by Feeding Method

| Feeding Method | Survived (n) | Died (n) | Total | Survival Rate (%) |
|-------------------------|--------------|-----------|------------|-------------------|
| Exclusive Breastfeeding | 122 | 6 | 128 | 95.3 |
| Mixed Feeding | 61 | 9 | 70 | 87.1 |
| Formula Feeding | 45 | 11 | 56 | 80.4 |
| Total | 228 | 26 | 254 | 89.8 |

Interpretation:

Table 4 shows the distribution of the neonatal survival outcomes by feeding Method. The highest survival rate was among exclusively breastfed neonates (95.3%), followed by mixed-fed neonates (87.1%), while formula-fed neonates recorded the lowest survival (80.4%). This shows a strong positive impact of exclusive breastfeeding on neonatal survival. Breast milk provided immunological protection and reduced mortality, consistent with Raihana et al. (2019) and Allana et al. (2022), who found that neonates exclusively breastfed had a significant reduction in infection and death rates.

Research Question 2: what are the major challenges affecting breastfeeding in NICU of FMC Asaba?

Table 5: Challenges Affecting Breastfeeding in NICU (n = 126 Mothers)

| Challenges Identified | Frequency (n=126) | Percentage (%) |
|---|-------------------|----------------|
| Maternal Illness or Postpartum Complications | 24 | 19.0 |
| Separation of Mother and Baby (NICU restrictions) | 20 | 15.9 |

| | | |
|---|------------|------------|
| Poor Lactation Support/Counseling | 22 | 17.5 |
| Limited Access to Breast Pumps and Milk Storage | 16 | 12.7 |
| Fatigue/Stress due to Neonatal Illness | 14 | 11.1 |
| Cultural Misconceptions about Breastfeeding | 10 | 7.9 |
| Work and Time Constraints (Return to Work) | 8 | 6.3 |
| Inadequate Privacy and Space for Breastfeeding | 7 | 5.6 |
| Perceived Insufficient Milk Supply | 5 | 4.0 |
| Total | 126 | 100 |

Source: NICU Record, FMC ASABA (2024)

Interpretation:

Table 5 shows the distribution of challenges affecting breastfeeding in NICU from January to December 2024. The leading challenges among mothers were Poor lactation support and counseling (17.5%), maternal illness/postpartum complications (19.0%), and separation from the baby due to NICU restrictions (15.9%). Fewer mothers identified issues like inadequate privacy (5.6%) and perceived low milk supply (4.0%) as key barriers. These findings align with Abugov et al. (2021) and Mai-lei et al. (2021), who reported similar barriers, including hospital policies, limited facilities, and cultural misconceptions affecting early initiation and continuation of breastfeeding in NICU settings.

Table 6: Monthly Distribution of Neonates in NICU (January–December 2024)

| Month | Number of Neonates (n) | Percentage (%) |
|-----------|------------------------|----------------|
| January | 20 | 7.9 |
| February | 21 | 8.3 |
| March | 22 | 8.7 |
| April | 23 | 9.1 |
| May | 20 | 7.9 |
| June | 21 | 8.3 |
| July | 22 | 8.7 |
| August | 26 | 10.2 |
| September | 22 | 8.7 |
| October | 21 | 8.3 |
| November | 18 | 7.1 |

| | | |
|--------------|------------|------------|
| December | 18 | 7.1 |
| Total | 254 | 100 |

Source: NICU Records, FMC Asaba (2024).

Interpretation:

The table 6 above shows the monthly distribution of neonates in NICU from January 2024 to December 2024 in relation to the months, the sum and percentage for the year. A total of 254 neonates were admitted to the NICU within the one-year period. The number of neonates admitted at the end of January was 20(7.9%) neonates, 21(8.3%) neonates were admitted in February, 22(8.7%) neonates were admitted in March, 23(9.1%) neonates were admitted in April, 20(7.9%) neonates were admitted in May, 21(8.3%) neonates were admitted in June, 22(8.7%) neonates were admitted in July, 26(10.2%) neonates were admitted in August, 22(8.7%) neonates were admitted in September, 21(8.3%) neonates were admitted in October, 18(7.1%) neonates were admitted in November and 18(7.1%) neonates were admitted in December. The month of August recorded the highest admissions (10.2%), while November and December had the least (7.1%). This shows that neonatal admissions in FMC Asaba are fairly consistent throughout the year with slight variations that may correspond with seasonal birth patterns and infection trends.

Table 7: Demographic Characteristics of Neonates

| Variable | Category | Frequency (n=254) | Percentage (%) |
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| Sex | Male | 136 | 53.5 |
| | Female | 118 | 46.5 |
| Gestational Age | <37 weeks (Preterm) | 89 | 35.0 |
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| Birth Weight | <2.5 kg (Low Birth Weight) | 96 | 37.8 |
| | ≥2.5 kg (Normal Weight) | 158 | 62.2 |
| Mode of Delivery | Vaginal | 168 | 66.1 |
| | Caesarean Section | 86 | 33.9 |

Interpretation:

Table 7 shows the distribution of the demographic characteristics of neonates admitted in NICU from January to December 2024. Majority of the neonates were term (65%) and had normal birth weights (62.2%). Males (53.5%) slightly outnumbered females (46.5%). Vaginal delivery (66.1%) was the more common mode of delivery.

Table 8: Feeding Methods of Neonates

| Feeding Method | Frequency (n) | Percentage (%) |
|-------------------------|---------------|----------------|
| Exclusive Breastfeeding | 128 | 50.4 |
| Mixed Feeding | 70 | 27.6 |
| Formula Feeding | 56 | 22.0 |
| Total | 254 | 100 |

Interpretation:

Table 8 shows the distribution of feeding Methods of neonates admitted in NICU from January to December 2024. This indicate that exclusive breastfeeding (50.4%) was the predominant feeding method. This positive finding suggests an improved adherence to the Baby-Friendly Hospital Initiative (BFHI) policy in FMC Asaba, showing better maternal education and NICU support for breastfeeding.

Research Question 1: is there a significant difference in survival rates between breastfed and non-breastfed neonates in NICU of FMC Asaba?.

Table 9: Neonatal Survival Outcomes by Feeding Method

| Feeding Method | Survived (n) | Died (n) | Total | Survival Rate (%) |
|-------------------------|--------------|-----------|------------|-------------------|
| Exclusive Breastfeeding | 122 | 6 | 128 | 95.3 |
| Mixed Feeding | 61 | 9 | 70 | 87.1 |
| Formula Feeding | 45 | 11 | 56 | 80.4 |
| Total | 228 | 26 | 254 | 89.8 |

Interpretation:

Table 9 shows the distribution of the neonatal survival outcomes by feeding Method. The highest survival rate was among exclusively breastfed neonates (95.3%), followed by mixed-fed neonates (87.1%), while formula-fed neonates recorded the lowest survival (80.4%). This shows a strong positive impact of exclusive breastfeeding on neonatal survival. Breast milk provided immunological protection and reduced mortality, consistent with Raihana et al. (2019) and Allana et al. (2022), who found that neonates exclusively breastfed had a significant reduction in infection and death rates.

Research Question 2: what are the major challenges affecting breastfeeding in NICU of FMC Asaba?

10: Challenges Affecting Breastfeeding in NICU (n = 126 Mothers)

| Challenges Identified | Frequency (n=126) | Percentage (%) |
|---|-------------------|----------------|
| Maternal Illness or Postpartum Complications | 24 | 19.0 |
| Separation of Mother and Baby (NICU restrictions) | 20 | 15.9 |
| Poor Lactation Support/Counseling | 22 | 17.5 |
| Limited Access to Breast Pumps and Milk Storage | 16 | 12.7 |
| Fatigue/Stress due to Neonatal Illness | 14 | 11.1 |
| Cultural Misconceptions about Breastfeeding | 10 | 7.9 |

| | | |
|--|------------|------------|
| Work and Time Constraints (Return to Work) | 8 | 6.3 |
| Inadequate Privacy and Space for Breastfeeding | 7 | 5.6 |
| Perceived Insufficient Milk Supply | 5 | 4.0 |
| Total | 126 | 100 |

Source: NICU Record, FMC ASABA (2024)

Interpretation:

Table 10 shows the distribution of challenges affecting breastfeeding in NICU from January to December 2024. The leading challenges among mothers were Poor lactation support and counseling (17.5%), maternal illness/postpartum complications (19.0%), and separation from the baby due to NICU restrictions (15.9%). Fewer mothers identified issues like inadequate privacy (5.6%) and perceived low milk supply (4.0%) as key barriers. These findings align with Abugov et al. (2021) and Mai-lei et al. (2021), who reported similar barriers, including hospital policies, limited facilities, and cultural misconceptions affecting early initiation and continuation of breastfeeding in NICU settings.

CONCLUSION

The study concludes that exclusive breastfeeding profoundly enhances neonatal survival and reduces morbidity among NICU-admitted infants. The protective benefits of breast milk—through immune components, growth factors, and anti-infective properties—cannot be replicated by formula or mixed feeding. However, challenges such as maternal illness, poor lactation support, institutional barriers, and socio-cultural beliefs continue to hinder breastfeeding practice in NICU settings. Therefore, integrating comprehensive breastfeeding support programs and mother-friendly policies in NICUs is crucial for improving neonatal health outcomes.

The findings clearly demonstrated that breastfeeding, particularly exclusive breastfeeding, plays a pivotal role in enhancing neonatal survival, promoting faster recovery, and reducing the risk of morbidity and mortality among hospitalized neonates. From the analysis of hospital records, it was evident that neonates who were exclusively breastfed showed better clinical outcomes compared to those who were partially breastfed or formula-fed. Exclusive breastfeeding was associated with a higher survival rate, reduced incidence of neonatal infections, improved weight gain, and shorter duration of hospitalization. These findings reaffirm the well-documented scientific and clinical benefits of breast milk as a natural, complete, and immunologically protective form of nutrition for newborns.

The results further highlighted that breastfeeding is not only a nutritional practice but also a lifesaving intervention in neonatal care. Breast milk contains immunoglobulins, enzymes, growth factors, and bioactive components that strengthen the neonatal immune system, prevent infection, and enhance intestinal maturation. These biological properties are particularly vital for preterm and low-birth-weight infants who are more susceptible to complications during their stay in the NICU.

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

REFERENCES

American Academy of Pediatrics. (2022). Technical report: Breastfeeding and the use of human milk. *Pediatrics*, 150(1), e2022057989. <https://doi.org/10.1542/peds.2022-057989>

American Academy of Pediatrics. (2023). Providing urgent maternal protections for nursing mothers (PUMP) Act: Implications for breastfeeding in the workplace. Retrieved from

<https://www.parents.com/these-new-laws-will-support-pregnant-and-nursing-employees-7092020>

American Academy of Pediatrics. (2025). Breastfeeding and health outcomes for infants and children. *Pediatrics*, 156(1), e2025071516. <https://doi.org/10.1542/peds.2025-071516>

Bangladesh National Nutrition Services. (2022). Barriers and facilitators of exclusive breastfeeding practices in Bangladesh: A qualitative study. *Journal of Health, Population and Nutrition*, 41(3), 1–12. <https://jhpn.biomedcentral.com/articles/10.1186/s41043-022-00312-y>

Campo, J. J., et al. (2024). Human milk antibodies to global pathogens reveal a landscape of infant immune protection. *Journal of Clinical Investigation*, 134(11), e168789. <https://doi.org/10.1172/JCI168789>

Carr, L. E., et al. (2021). Role of human milk bioactives on infants' gut and immune health. *Frontiers in Immunology*, 12, 604080. <https://doi.org/10.3389/fimmu.2021.604080>

Centers for Disease Control and Prevention. (2023). New laws for pregnant workers and breastfeeding parents. Verywell Family. Retrieved from <https://www.verywellfamily.com/new-laws-for-pregnant-workers-and-breastfeeding-parents-7095927>

Corona, L., et al. (2021). Human milk oligosaccharides: A comprehensive review. *Nutrients*, 13(9), 3364. <https://doi.org/10.3390/nu13093364>

Dinleyici, M., et al. (2023). Functional effects of human milk oligosaccharides. *Gut Microbes*, 15(1), 2186115. <https://doi.org/10.1080/19490976.2023.2186115>

Ding, Y., et al. (2024). Breastfeeding and risk of food allergy and allergic rhinitis in children: A meta-analysis. *European Journal of Pediatrics*. <https://doi.org/10.1007/s00431-024-05580-w>

Donald, K., et al. (2022). Secretory IgA: Linking microbes, maternal health, and infant immunity. *Mucosal Immunology*, 15(6), 1080–1093. <https://doi.org/10.1016/j.mucimm.2022.07.005>

Donald, K., et al. (2024). Secretory IgA in breast milk protects against asthma susceptibility. *Cell Reports*, 43(10),