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Reflexes in New-Borns Born in Private Hospital of Dharwad Town

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Abstract

Reflexes in newborns are critical for understanding early neurological health and development. These automatic, involuntary movements play an important role in survival, feeding, and motor skill development during infancy. This observational study is conducted to identify the most prevalent reflexes in newborn infants, including rooting, sucking, Moro, palmar grasp, stepping, asymmetrical tonic neck reflex (ATNR), and symmetrical tonic neck reflex (STNR) which will aid in tracking milestones and developments of infants in the future. 27 newborns were involved and it was performed at a local maternity hospital to ensure consistency. Reflex testing was performed by a trained pediatrician and neonatologist using standardized procedures. Each reflex was tested twice for reliability and parents were monitoring. The study found that there was a change in reflex strength across birth weight groups. Below-weight infants had weaker reflexes which may cause potential development delays. Normal and above-weight infants had stronger and more consistent reflexes, with over 88% showing well-developed reflexes. In addition, gender differences were also noted and girls showed more consistent rooting and sucking reflexes while boys had stronger Moro and Palmar grasp reflexes. This research shows the importance of reflex testing in evaluating neurological health and detecting early signs of development concerns in newborns.

Keywords: *Reflexes, Reflex Identification, Paediatric Evaluation, Infant Response Observation, Birth Weight, Gender.*

INTRODUCTION

Reflexes are a foundation for babies' wellbeing. Neonates' reflexes are automatic, involuntary movements or responses that they exhibit. They are crucial for a baby's survival and development. There are nearly 25 reflexes and more that help new-borns maintain comfort and safety as well as play a key role in neurological health.

The research identifies several prevalent newborn reflexes: rooting, sucking, Moro, palmar grasp, stepping, asymmetrical tonic neck reflex **(ATNR),** Symmetrical Tonic Neck Reflex ***(STNR***). The rooting reflex helps the baby locate the breast or bottle, while the sucking reflex is crucial for feeding. The Moro reflex causes the baby to startle and then retract its limbs. The palmar grasp reflex enables the baby to grip objects placed in its palm. The stepping reflex is observed when a baby, held upright with feet on a solid surface, makes stepping motions. The ATNR and Moro are primitive reflexes that are important for neurological development and motor skills. Doctors and paediatricians often monitor these reflexes to assess a baby's well-being. Understanding these reflexes also aids in tracking developmental milestones, appearance or non -appearance of these at birth allows for the early detection of any delays in the infants.

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METHODOLOGY

This research was conducted from the dates of June 11th, 2024 - July 18th, 2024. It was a naturalistic research design with observation that identified and documented the most prevalent reflexes in new-born infants.

The study included 27 new-borns from a local, most popular maternity hospital in which most of the well-to-do families opted for successful delivery outcomes.

Observations were conducted in a controlled clinical environment, ensuring the same conditions for observing and recording reflexes. It was based on the data of 2 NICU below-weight new-borns, 17 normal weight new-borns, and 8 above-weight new-borns.

The differences between girls and boys were also observed across these groups to assess their development and overall well-being through the reflexes.

Reflex testing was conducted in a quiet, temperature-controlled room by the trained paediatrician, neonatologist, and child development specialist. The room was equipped with all necessary medical instruments like the sterile gloves, pacifiers, and soft surfaces.

The parents were informed about the procedures in advance and were present during the testing. Every infant was observed and tested in a calm and natural state to ensure accurate reflex testing. Each infant was observed and tested for the following reflexes in the same manner:

Rooting Reflex: The paediatrician gently stroked one side of the infant's cheek with a sterile cotton swab. The expected response was for the infant to turn its head toward the cotton swab and begin to make sucking motions.

Sucking Reflex*:* A gloved finger was put into the infant's mouth, lightly touching the roof of the mouth. The strength and consistency of the sucking reflex was observed which is crucial for feeding.

Moro Reflex *(Startle Reflex):* The paediatrician placed the infant on a soft surface and gently lifted the infant's head slightly off the surface before allowing the head to drop back while making sure the infant's head was supported. The infant's reaction was observed, particularly the extension of the arms and legs.

Palmar Grasp Reflex: A finger was placed in the infant's palm and gently pressed down. The strength and duration of the infant's grasp were recorded. This was tested on both hands to measure bilateral reflex activity.

Stepping Reflex**:** The infant was held upright with the paediatrician's hands supporting under the arms, allowing the feet to lightly touch a flat, solid surface. The stepping and walking motions were recorded.

Asymmetrical Tonic Neck Reflex (ATNR): The infant was placed on its back, and the paediatrician gently turned the infant's head to one side. The expected response was the arm and leg on the side the head was turned to extend, while the opposite arm and leg would bend. The reflex was tested for both sides.

Symmetrical Tonic Neck Reflex (STNR): The infant was positioned on its stomach, and the paediatrician gently flexed and extended the infant's head while observing the corresponding movements of the arms and legs. When the head is flexed, the arms flex and the legs extend. Conversely, when the head is extended, the arms extend and the legs flex.

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Each reflex was tested twice to ensure reliability of the response. After the tests were completed, the paediatrician debriefed the parents, explaining the observed reflexes and addressing any concerns or questions they might have had. This detailed and standardized approach allows this research to have high-quality and reliable data on neonatal reflexes.

RESULTS & DISCUSSION

The results show the prevalence and changes of neonatal reflexes across different birth weight groups in the NICU. Among the NICU below-weight new-borns (n=2), one neonate exhibited weaker rooting and sucking reflexes, contributing to feeding challenges. The Moro reflex was subdued in both these infants, indicating lower neurological maturity, both NICU babies also showed weaker palmar grasp and stepping reflexes. The ATNR and STNR reflexes were less pronounced in both infants, reflecting potential delays in motor development. These observations are in line with Khatib and Khadi who observed that 50 percent of them did not exhibit rooting reflex, 46.9 sucking reflex while 10.9 did not exhibit moro reflex, 12,5 did not have palmar reflex and 3.1 did not have withdrawal reflex. In the normal birth weight group (n=17), 16 babies (94%) exhibited strong rooting and sucking reflexes, ensuring effective feeding. The Moro reflex was well-developed in 15 babies (88%), and 94percent had a strong palmar grasp. The stepping reflex was observed in 82 percent of the infants, and both ATNR and STNR reflexes were well-developed in 88 percent of the group. For the above-weight new-borns (n=8), 88% showed strong rooting and sucking reflexes, although with slight delays in some cases. The Moro reflex was strong in 6 cases, and all exhibited a consistent palmar grasp. The stepping reflex was observed in all of the infants, and the ATNR and STNR reflexes were well-developed in 7 cases. Similar results are reported by Khatib (1986), Srivastava (1978) and Sohi et al (1977) who reported that babies with low birth weight had poor reflex score when compared with babies weighing 2.5 kg and above

Gender differences revealed that 70 percent of girls exhibited earlier and more consistent rooting and sucking reflexes compared to boys. Conversely, 80 percent of boys demonstrated stronger Moro and palmar grasp reflexes. Khatib (1986) also observed gender differences in the reflexes at birth. She reported that withdrawal reflex was significantly strong in female newborns.

CONCLUSION

This research provided valuable insights into the development of reflexes in new-borns across different weight categories. The findings indicate that NICU below-weight new-borns generally exhibit weaker reflexes, which may require additional monitoring and support to ensure they reach developmental milestones. Normal and above-weight new-borns showed strong and consistent reflexes, with only minor variations, suggesting that reflex development is largely on track in these groups.

Gender differences were observed, with girls typically displaying earlier and more consistent reflexes, while boys exhibited more prominent responses. However, this study faced limitations, particularly in accessing a sufficient number of NICU below-weight new-borns, making it difficult to generalize the findings for this group. The small sample size of NICU babies limits the ability to draw broader conclusions about this group.

Future research should focus on including a larger sample of NICU below-weight new-borns to gain a better understanding of their reflex development. Additionally, longitudinal studies could explore how early reflex development impacts long-term outcomes, offering insights into the best interventions to support these infants' growth and neurological health.

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