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RESEARCH ARTICLE

EXPLORING AWARENESS & REFERRAL PRACTICES FOR PHYSIOTHERAPY EARLY INTERVENTION IN NICUAMONG PEDIATRIC HEALTHCARE PROFESSIONALS

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ABSTRACT

Introduction: Premature and critically ill infants in the NICU require timely physiotherapy interventions for optimal developmental support. Despite its significance, awareness of and referral practices for NICU physiotherapy among pediatric healthcare professionals are not well-documented. This study investigates the current awareness and referral practices regarding physiotherapy early intervention in the NICU among pediatric healthcare professionals. ***Methodology:*** Pediatricians, neonatologists, pediatric head nurses, pediatric intensivists, and other healthcare professionals from Gujarat, India, participated in this online survey study. A questionnaire was distributed to assess their knowledge, awareness, and factors influencing their physiotherapy referral decisions in the NICU. The principal investigator met with participants at their workplaces to explain the study and collect informed consent along with the completed questionnaires. ***Results:*** The study found that pediatric healthcare professionals recognize the role of physiotherapy in promoting recovery and development in high-risk neonatal conditions. Notable conditions where physiotherapy was considered beneficial included Erb's palsy (78.6%), respiratory conditions (74.8%), and torticollis (68%). However, fewer respondents believed early intervention was beneficial for conditions like Meconium Aspiration Syndrome (29.1%), intrauterine growth restriction (IUGR) (27.2%), or jaundice (9.7%). Regarding referral practices, 43.7% of respondents reported that they "sometimes" refer infants to physiotherapy, 29.1% "frequently" refer, and 9.7% "always" refer. In contrast, 17.5% of participants "rarely" or "never" refer infants to physiotherapy, indicating that some professionals either perceive limited need or face barriers in implementation. ***Conclusion:*** This study highlights a gap between the awareness of the benefits of physiotherapy early intervention and actual referral practices among pediatric healthcare professionals. While many recognize the value of physiotherapy, a significant portion does not consistently refer infants for services. Increased education and support for healthcare professionals could improve referral practices, ultimately benefiting neonatal health outcomes.

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INTRODUCTION

A hospital's "specially equipped area where critically ill and unstable newborns receive diagnostic, therapeutic, and life support care interventions for a variety of conditions" is known as a neonatal intensive care unit (NICU).[1] Due to advancements in obstetrics and neonatology technology, the survival rate of prematurely born babies admitted to neonatal intensive care units (NICUs) has increased, allowing preterm children to be saved at earliest stages of pregnancy.[2]In the past few years, the area of physical therapy has gained popularity and grown in importance as a therapeutic option for newborns in neonatal intensive care units (NICUs).[3]

Early intervention: A wide range of actions intended to improve a young child's development are together referred to as early intervention. Early intervention should ideally begin with a comprehension of thorough evaluation of the child's and the family's needs and strengths, which includes active monitoring and reevaluation as the kid grows and the provision of suitable supports and services.[4] The best treatment for motor issues may lessen cognitive and psychosocial issues, therefore early detection of children with motor disabilities is crucial for early support and intervention.[5] "Preterm, low birth weights, congenital abnormalities, respiratory disorders, neuromuscular disorders, andinfant's post-surgery - for example following surgery, either heart or thoraco-abdominal surgery " are among the infants admitted to the NICU.[1]Risk infants are newborns or young children who are more likely to experience a sensory, motor, or mental disability as they grow up.[6] Infant stimulation programs should naturally target newborns with a variety of risk factors, particularly those with a mix of environmental and physiological elements.[7]

***Mechanism of early Intervention*:** Early intervention begins by concentrating on the unique neuroplastic characteristics of the developing brain that render it especially receptive to early intervention.[8] The brain's capacity to reorganize neural connectivity in response to specific environmental exposures or training is known as neuroplasticity. This ability is especially crucial in cases of brain injuries, where the brain may attempt to compensate for the functional impairment caused by the insult by forming new or altered neural connections. It is commonly known that the brain's plasticity peaks at birth and gradually decreases (yet still exists) over the course of life.[8]

Physiotherapy in NICU: Implementing a multidisciplinary collaboration approach is crucial to providing comprehensive care. The interdisciplinary team at the newborn critical care unit includes physiotherapists.[9] Physiotherapy is also indicated in neonates with both neurological and Orthopeadic problems.[10]A neonatal

physiotherapist can recognize infants at risk of difficulties with movement or developmental challenges due to premature or traumatic birth.[11]Premature babies have an unstable physiological condition that makes it difficult to initiate and sustain cardiopulmonary responses, makes it difficult to coordinate motor actions, and increases the chance of problems that could negatively impact the baby's growth and development. Therefore, in a comprehensive and multidisciplinary approach, getting physiotherapy and rehabilitation help in line with the baby's demands in the neonatal intensive care unit has a crucial role.[12]In neonatal intensive care facilities, physiotherapists treat infants using a combination of neuromuscular and chest physiotherapy. Assessing vital parameters like heart rate, respiratory rate, and partial pressure of oxygen saturation, or SpO2 was the primary emphasis of chest physical therapy. Airway clearance procedures, such as percussion, vibration, postural drainage, and airway suction, were the main emphasis of the treatment. The majority of physiotherapists in neuromuscular physiotherapy concentrated on therapeutic handling, positioning, passive range-of-motion exercises, and parent education reference.[13]Researchers have determined that early intervention programs, including kinesthetic stimulation or vestibular sensory system stimulation, have a positive impact on preterm new borns . For preterm babies, kinesthetic stimulation combined with massage aids with weight gain.[14] Due to prolonged immobilization, lack of physical activity leads to demineralization and growth retardation of bone in newborns. Studies say that the range of motion exercises performed by therapist in different joints helps in increasing bone mineral density and weight gain in premature newborns.[14]One of the roles of the physical therapist is to improve the baby's oral motor control. The preterm infant has poor oral motor control related, in part, to weaker muscle tone around the mouth, less sensitivity and less tongue strength compared to the full-term infant.[15] Oral sensory-motor stimulation is described as stroking or pressure on the peri- and intra-oral structures: the cheeks, lips, jaw, tongue, palate and gums, as well as non-nutritive suction of a pacifier.[15]

Need of the study: A growing percentage of extremely preterm newborns are surviving the neonatal era as a result of advancements in neonatal treatment in recent years. The prevalence of chronic co-morbidities among pediatric intensive care unit(PICU) and neonatal intensive care unit (NICU) patients has grown due to the higher risk of morbidities, including impaired lung function and developmental delay, in this population. Consequently, the emphasis has changed to incorporate rehabilitation into the routine physiotherapy intervention in NICUs.[16]Much research hasn't been done on how neonatal healthcare professionals view physiotherapist roles in managing neonates, their practice patterns and services, their place in the neonatal intensive care multidisciplinary team, their use of evidence-based practice, and their awareness of the field in this context. Thus, the study's objective is to Explore how Pediatric healthcare professionals in Gujarat's public and private newborn critical care units view, Aware and Referral Practice for the physiotherapist's role in NICU.

Objective of the study: The objective of the study was to explore Awareness and Referral Practices for Physiotherapy Earlyintervention in NICU among Pediatric health care professionals in Gujarat, India.

METHODOLOGY

Study Design: This is a Cross-Sectional Study in which Pediatric health care professionals working in Gujarat, India were approached to fill up the google form which is divided into two sections namely consent section and Questionnaire section.

Selection Criteria: Pediatric health care professionals working in Gujarat, India, Volunteers to Participate in the Study.

Study Population: Qualified Practicing Pediatrician, Neonatologist, Pediatric head nurse, pediatric intensivist and other Pediatric health care professionals**,** dealing with patients through working in Pediatric health care in Gujarat, India.

Sample Size: A total of 103 Pediatric health care professionals were Participated. In which 49 Pediatrician, 9 Neonatologist, 27 Pediatric head nurse, 2 pediatric intensivist and 16 other Pediatric health care professionals during January and February 2025.

Procedure: This survey includes response data from Pediatric health care professionals across the Gujarat, India during January and February 2025. In this Study, the Google Form has been developed, featuring a questionnaire organized into two separate sections. we reached out to a total of 125 pediatric healthcare professionals, and of those, 103 participated by providing responses. Google Form was divided into two sections, namely the consent section (Appendix-I) and the Questionnaire section (Appendix-II). The Questionnaire section has 12 closed ended questions divided into six parts. The first part inquires about Demographic details. The second part inquires about Awareness of Physiotherapy in NICU. The Third part inquires about attitudes towards NICU physiotherapists. The Fourth part inquires about Referral Practices. The Fifth part inquires about Perceived Benefits. The Sixth part inquires about Barriers to Referral. The Principal investigators had personally met the participants with prior appointments in their workplace and explained the study, and got the consent form and Google form filled. Data were analyzed by using SPSS 20 for Windows, and the frequency distribution and percentage values were calculated and reported.

RESULTS

Demographics

Professional Role Wise Distribution

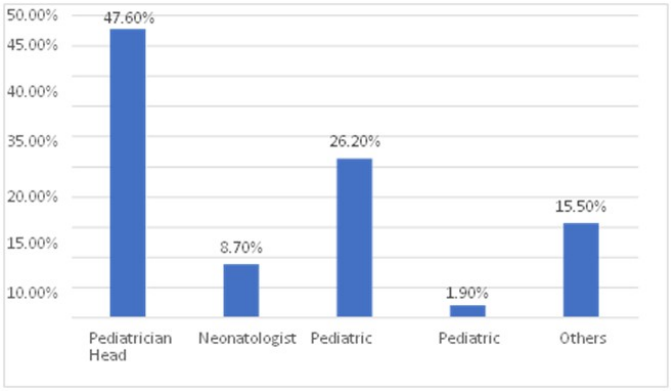

Chart 1. Professional Role Wise Distribution

Years of Experience Wise Distribution

Table 1. Years of Experience Wise Distribution

Years	No.	Percentage
<1	9	8.7%
1-5	48	46.6%
6-10	19	18.4%
>10	27	26.2%

A small proportion (8.7%) of healthcare professionals have less than one year of experience. A large proportion (46.6%) of pediatric healthcare professionals have 1 to 5 years.

Awareness of Physiotherapy in NICU

Table 2. of Result Based On Familiarity

Familiarity	No.	Percentage
Very Familiar	46	44.7%
Somewhat Familiar	46	44.7%
Not familiar	11	10.7%

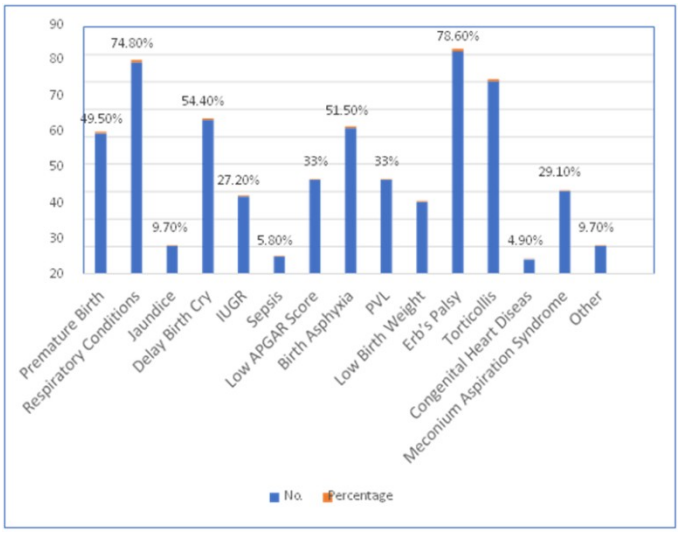

Chart 2. Result Based on Condition

Attitude Towards Nicu Physiotherapist: Result Based on collaboration with a Physiotherapist

Table 3. Result Based on Collaboration with a Physiotherapist

Collaborate	No.	Percentage
Yes	74	71.8%
No	29	28.2%

Result based on Integration of Physiotherapist

Table 4. Result based on Integration of Physiotherapist

	No.	Percentage
Yes	94	91.3%
No	9	8.7%

Referral Practices

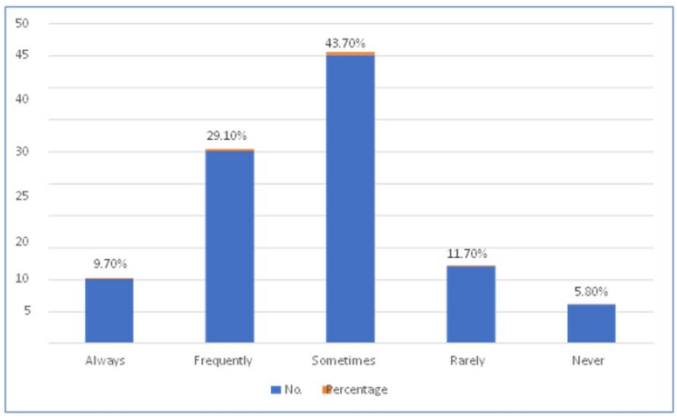

Chart 3. Result Based on Reference

Result based on factors influence on that

Table 5. Result based on factors influence the decision

	No.	Percentage
Medical Condition	83	80.6%
Parent Request	19	18.4%
Physiotherapy Recommendation	51	49.5%
Other	14	13.6%

Perceived Benefits: Result based on benefits of Physiotherapy.

Table 6. Result based on benefits of physiotherapy

	No.	Percentage
Very Beneficial	39	37.9%
Beneficial	59	57.3%
Neutral	5	4.9%
Not Beneficial	0	0

Result based on outcomes associate with Intervention

Table 7. Result Based on Outcomes Associate with Intervention

	No.	Percentage
Improve motor Development	82	79.6%
Enhance Parent –Infant bonding	26	25.2%
Reduce length of hospital stay	67	65%
Help in Weight gain	39	37.9%
Other	18	17.5%

Barriers to Referral

Result based on Barriers to Referral Practice

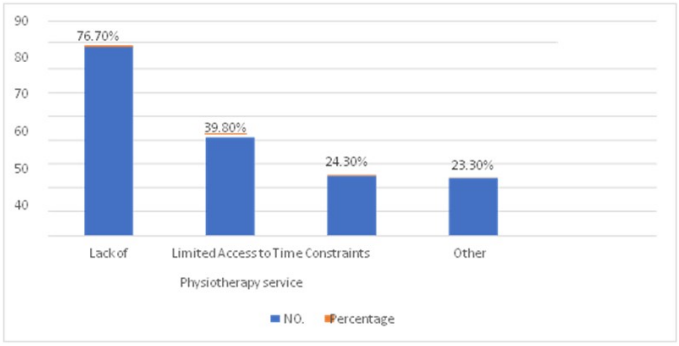

Chart 4. Result based on Barriers to Referral Practice

DISCUSSION

The study achieved its aim to explore referral practice and describe the perceptions of Paediatric healthcare professionals (Paediatrician, Neonatologists, Paediatric head nurse and Other) of the role of physiotherapists in the NICU. In our study major respondents were Paediatricians (47.6%). The experience was varied among all Paediatric health professionals in Gujarat. The majority of paediatric healthcare professionals had 1–5 years (46.6%) of experience in the NICU. Five main headings were elaborated on in this research study as it pertains to the role of the physiotherapist in the management of the NICU patient. In our study significant majority (89.4%) are familiar with the role of physiotherapy in the NICU. Healthcare professionals perceived physiotherapy in NICU as a beneficial practice in the management of patients with neuromuscular conditions such as Erb's palsy and Torticollis with highest respond of 78.6% and 68% along with respiratory conditions with same respond of 74.8% and around half of the healthcare professionals believed that physiotherapy is useful in condition like Delay Birth cry (54.5%), Birth asphyxia(51.5%) and Premature Birth (49.5%). Other conditions, including Jaundice (9.7%), IUGR (27.2%), sepsis (5.8%), low APGAR scores (33%), Birth Asphyxia (51.5%), and Low Birth Weight (25.2%), congenital heart disease (4.9%) get less response compare to neuromuscular and respiratory conditions. By Giving the diversity of conditions and their impact, increasing awareness among healthcare professionals in the NICU about the benefits of physiotherapy is essential to ensure timely, comprehensive care that optimizes neonatal recovery and development. 71.8% of healthcare professionals recognize the importance of working closely with physiotherapists and they collaborated with physiotherapist for multidisciplinary approach while 28.2% do not.

The frequency of referencing physiotherapy in the NICU by pediatric health professionals indicates varying levels of awareness and integration of physiotherapy in neonatal care. Additionally, 65% believe physiotherapy can help reduce the length of hospital stays, about 25 – 40 healthcare professionals believe that physiotherapy may helpful in improving parent-infant bond and weight gain. These findings highlight the crucial role of physiotherapy in addressing multiple aspects of neonatal care, from motor development to overall recovery, and emphasize the importance of early intervention to optimize outcomes for NICU infants. The most prominent barrier is a lack of awareness, cited by 76.7% of respondents, indicating that many professionals may not fully recognize the importance or availability of physiotherapy services for neonatal care. Limited access to physiotherapy services was also a significant factor, with 39.8% of respondents noting that the availability of physiotherapists in the NICU setting is restricted, Understanding the current referral practices and awareness levels among pediatric healthcare professionals is essential for identifying gaps in education, barriers to referral, and opportunities for improvement. Early Physiotherapy Intervention as a beneficial role in the management of patients with neuromuscular and respiratory conditions. While chest physiotherapy is a well-known practice, its benefits for neonates remains unclear. Alaparthi et al. (2013) and Kamath, Singh, Khandelwal, & Salhan (2012) report that chest physiotherapy is particularly useful in maintaining a clear airway, to re-expand collapsed lung segments (atelectasis), maintain adequate levels of oxygenation and poor gaseous exchange, facilitate early weaning and manage excessive secretions.[17,18] However, Flenady and Gray (2002) reported that less babies required ventilation post-extubation due to the benefits of chest physiotherapy, however no other benefits were demonstrated. Our study also suggest that early physiotherapy intervention is recognized for contributing to a wide range of Motor developmental and health improvements in NICU settings.[19] Our study findings indicate that the majority of pediatric healthcare professionals have limited knowledge and awareness regarding the role of physiotherapy early intervention in the NICU. Additionally, approximately 70% of healthcare professionals expressed a desire to integrate physiotherapy into the NICU setting. This is consistent with the findings of Jamie Lee Ponto et al (2020) also emphasized that Physiotherapists working in this neonatal intensive care setting need to promote their profession through the education of other neonatal healthcare professionals in order to improve awareness, referral patterns and integration into the multidisciplinary team. Evidence-based practices and improving training and skills development in the area of neonatal physiotherapy can be further explored in this setting.[1]

CONCLUSION

Our Study Reveals a Significant disconnect between Pediatric Healthcare Professionals' Awareness of the Benefits of Physiotherapy Early Intervention and their Referral Practices. Despite recognizing the importance of Early Intervention, Many Pediatrics Healthcare Professionals are not referring infants for Physiotherapy Services in NICU. Pediatric Healthcare Professionals should refer infants and children for Physiotherapy. By doing so, we can provide infants with the best possible start in life and set them on the trajectory for Optimal Health and Well-being with a multidisciplinary approach in the NICU, where physiotherapists, pediatricians, neonatologists, and nursing staff can work together to prioritize early intervention.

Recommendation: Based on the findings of this study it is recommended that physiotherapists define their role and benefits in the NICU and create awareness by educating healthcare professionals working in the NICU about their role in the management of the neonate and to promote the benefits of their treatments and the profession in the NICU.

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