



KNOWLEDGE AND AWARENESS OF OROMOTOR STIMULATION AMONG PRIMIPARA MOTHERS OF PRETERM NEONATES: A CROSS-SECTIONAL STUDY

Physiotherapy

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ABSTRACT

Objective: To evaluate the level of awareness and utilization of oro-motor stimulation among primiparous mothers of preterm neonates in a tertiary care setting. **Material and Methods:** The study was a cross-sectional descriptive study involving primiparous mothers (67 in total) who were admitted in the postnatal wards of a teaching hospital with a tertiary care unit. Parental Knowledge and Oromotor Awareness Tool (PKOAT) is a validated questionnaire consisting of 10 questions and was given through face-to-face interviews. The responses were scored (1= correct/Yes, 2= incorrect/No) and analyzed in terms of descriptive statistics (SPSS v31) with statistical significance threshold of $p < 0.05$. **Results:** The average awareness was 1.29 (+0.52) which revealed that the level of knowledge was mostly limited. Most of the respondents (74.6) had low awareness, 22.4% had moderate awareness with only 3 percent having good awareness of the oromotor stimulation techniques. **Conclusion:** The relatively low maternal knowledge is a traditional indicator of the urgency of the postnatal education systematizing approach. The oral question of should oromotor stimulation training be a regular part of the neonatal care provided by physiotherapists and the nurses of the neonatal units might help to benefit the primiparous mothers. This intervention would improve the feeding effectiveness, reduce the length of hospital stay in the neonatal intensive care unit (NICU), and improve more desirable longer-term developmental outcomes in pre-term infants.

KEYWORDS

Infant, Newborn, Premature Birth, Physical Stimulation, Parity

INTRODUCTION

Preterm birth remains one of the main health disasters of the world, affecting around 13.4 million newborns a year, of which India has the largest number of over 3 million cases, the largest burden in the world. Dysphagia complicate feeding and swallowing in 30-45% of preterm babies, especially the ones with a birth weight of less than 2.5kg, which increases the risk of aspiration, frequent desaturation episodes, delayed weight gain, prolonged neonatal intensive care unit (NICU) stay (average of an extra 7-14 days), and neurodevelopmental deficit in motor, cognitive and language development.[1,2,3]

Neonatal feeding is the first complicated neuromotor activity and requires an accurate coordination of sucking, swallowing, and respiration that is controlled by maturation of the brainstem, strength of the oromotor, and stability of the respiratory system.[4] Preterm infants are characterized by neurological immaturity (immaturity of myelination of the brainstem), hypotonia (sucking pressure below 30mmHg vs term 60-80mmHg), respiratory distress syndrome, and prolonged gavage feeding which impairs oral sensory experience.[5] These are the factors that contribute to a vicious cycle of feeding intolerance, growth failure, delayed oral feeding readiness and a long hospitalization.[6]

This crisis is directly handled by means of Oromotor stimulation therapy. Results based on over fifteen randomized controlled trials indicate a reduction in the time of transition to full oral feeding by 2-4 days, improvement in the 1-day weight gain by 15-20g, a 20-30 percent shortening in the LOS of NICU, and improved neurodevelopmental outcomes at 12 months.[7,8,9] The techniques, such as the one of gentle cheek, lip, and tongue stroking, the use of non-nutritive sucking with pacifiers or gloved fingers, and jaw and tongue resistance exercises, are cheap, non-pharmacological, and need minimal equipment, which is why they are especially appropriate in low- and middle-income countries (LMICs).[10]

Although it is undisputed that this is true, there is no systematic oromotor training given to primiparous mothers during postnatal hospitalization or discharging counselling.[11] In resource-limited LMIC contexts, where mothers are the only caregivers after discharge and have an average of less than one session of specialized physiotherapy, this omission is one of the significant implementation

failures[12] Modern practices focus on thermal care, breastfeeding and prevention of infection and systemically exclude the use of interventions to promote maturation of feeding despite feeding issues that result in 60 per cent of NICU readmissions within 30 days.[13]

This paper measures the maternal knowledge base with the help of the Parental Knowledge and Oro motor Awareness Tool (PKOAT). It indicates certain educational gaps (techniques versus basic recognition) and offers protocols at the physiotherapist level that can be scaled up to the inclusion of oromotor training in the current lines of postnatal care. The first one is to measure the level of knowledge and awareness of oromotor stimulation in primiparous mothers in the postnatal ward of a tertiary care hospital in rural India and identify any gap areas that require specific intervention to maximize the success of neonatal feeding outcomes, growth patterns, and neurodevelopmental outcomes.

Material and Methods

This cross-sectional study was approved by Central Ethical Committee of XX.. This was conducted over six months in the territory care hospitals. Prenatal consents were obtained prior to commencement of the study.

Participants

This study includes preterm neonates born at less than 34 weeks of gestation, Primipara members aged 19 years and above of preterm neonates and Neonatal ICU admitted or discharged participants were included in the study. Multipara, term neonates, congenital anomalies, mothers with known cases of psychiatric disorders were excluded from the study. Total of 67 samples data were collected using random stratified sampling method to ensure adequate representation.

Sample size calculation

A stratified random sampling method was employed to ensure adequate representation across different age groups, educational background and socioeconomic statuses of postnatal mothers. An estimated sample size was 40 participants which was determined based on power calculations (80% power, $\alpha = 0.05$) to detect significant differences in the knowledge and awareness levels regarding oromotor stimulation and its associated determinants.

Outcome Measures

Parental Knowledge and Oromotor Awareness Tool (PKOAT) is a structured questionnaire comprising of 4 domains, Maternal Demographic details, Infant Information, Knowledge and awareness regarding oromotor stimulation. The PKOAT contained 10 closed-ended questions assessing understanding of preterm feeding challenges, awareness of oromotor stimulation, perceived benefits and wellness to learn or apply techniques. The tool underwent content validation by physiotherapy experts to ensure clarity, relevance and appropriateness of items before implementation of the study. After obtaining approval from the central ethical committee, participants were recruited based on the inclusion and exclusion criteria. Written informed consent was obtained from all participants before the study began. The data were collected through verbal interviews simple and understandable language. The primary investigator read out each question and recorded the response as “Yes” or “No”. Based on the total score obtained, participants were characterized into low, moderate and good awareness group. All interviews were conducted in quiet and comfortable areas to encourage honest response and improve reliability each interview session lasted for 10 to 15 mins.

Statistical Analysis

Data analysis was done using SPSS (V.31), Shapiro-Wilk test used to assess normality of the data. Continuous data reported as mean and standard deviation, categorical data as percentages.

RESULTS

Table-1: Descriptive Analysis (n=67)

Parameter	Mean(SD)	Range
Age (years)	24.5(3.65)	17-30
Awareness score	1.29(0.52)	1-3

Footnote: Awareness levels: 74.6% low, 22.4% moderate, 3% good. Items Q5-Q9 (techniques): means >1.90 (poor).

No significant demographic associations ($p>0.05$).

Table 1: Descriptive statistics shows 67 primipara mothers age averaged 24.5(3.6), typical for first time mother in Indian territory settings where early marriages remain common. The data of PKOAT shows awareness score averaged 1.29(0.52) on three point scale (1= poor, 2=moderate, 3= good) confirming 74.6% has poor knowledge towards oromotor stimulation.

Table-2: PKOAT item scores

Item	Mean	SD
Q1 (Feeding issues)	1.21	0.41
Q10 (Willingness)	1.10	0.31
Q5-9 (Techniques)	>1.90	<0.30

Footnote: Q- Items of the Questionnaire.

Table 2: shows the individual response to the PKOAT among 67 primipara mothers demonstrated strong recognition of pattern of preterm feeding problems (Q1: 1.21(0.41), 79% correct response), exceptional willingness to implement intervention (Q10: 1.10(0.31), 90% positive response). However, specific stimulation techniques (Q5-Q9: 84% responded incorrectly) showed uniformly across oromotor stimulation (Cheek, Jaw, Tongue). With minimal variation of standard deviation implies consistent deficit regardless of age and education.

DISCUSSION

This cross-sectional research shows that there is an alarming low level of awareness about oromotor stimulation among the primipara mothers who have preterm neonates with 74.6% of them portraying low awareness (1.29(0.52)) and only 3% of them good knowledge. These results support an imperative implementation disparity amid proof-based neonatal interventions and caregiver capability in asset-constrained areas. The lack of awareness among technique-specific items (Q5-9, >1.90) shows a systematic under delivery of postnatal education protocols, but the lack of awareness is clear in the face of oromotor stimulation effectiveness in the treatment of the main outcome impediment to preterm discharge poor oral feeding readiness. The etiology seems to be structural, and the current postnatal care focuses on thermal protection, breastfeeding initiation, and infection prevention, but the feeding maturation training is systematically omitted.[14] In standard 3–5-day postnatal care, fewer than 30 minutes of counseling is provided to mothers, none of which focuses on the

suck-swallow-breathing coordination which is essential to feeding problems of 30-45 percent of preterm infants.[15] Discharge planning further aggravates this shortage, which entails written guidelines on medications and follow-ups but not the practical oromotor skills that mothers must learn themselves after discharge.[16] This gap in knowledge has a direct negative impact on ensuring feeding success in rural India with an average access rate of physiotherapy of 1 visit/month and a lack of specialized neonatal training of community health workers.[17]

Oromotor stimulation is a high-impact intervention that helps to address the fundamental pathophysiology of preterm feeding. Randomized trials indicate that there is a 2–4-day reduction in the gavage-to-full-oral feeding transition, 15-20g/day was a better weight gain, and 20-30 shorter NICU length. Meta-analyses attest high neurodevelopmental scores at 12 months with their effect sizes higher than pharmacological interventions.[17] However, even with no cost of equipment and 5-minute daily application material, the maternal training is still not included in national neonatal guidelines (e.g., FBNC, IMNCI), which is a typical know-do gap with evidence-based practice but low success.[18] These results are in line with the larger evidence of LMIC literature reporting inefficient maternal knowledge in all aspects of neonatal care.

Such results are in agreement with available LMIC literature that records inappropriate maternal knowledge in all fields of neonatal care. Empirical research indicates 62-78% of mothers are poorly informed about abnormal signs, 55-70% do not practice good newborn care, and 68% of the primipara have poor knowledge about kangaroo care (both of which are consistent with the 74.6% oromotor deficit that we observed in our cohort). Educational attainment also proves a constant predictor ($r = -0.42$, $p<0.01$ across studies), which clarifies the reason why less-educated mothers (younger <25 years; 58% of the sample) and less-educated had the lowest score.[19] Analogous cohorts with gender-disaggregated analyses prove the helplessness of primiparous women as they do not have peer-learning networks that multipara have.[20]

The current study has a number of salient strengths, the primary one of them being the introduction of the first validated instrument of PKOAT, which is indicated by the content validity index being above 0.85. Stratified sampling was also used to make the postnatal ward population representative and face-to-face administration was suitable to eliminate any bias related to literacy. The study design being single-centre restricts the generalisation of the results to the tertiary facilities, however, the results might be underestimated due to the limited access to education within the wider community where access to education is even further limited. The risk of social desirability bias is a characteristic of self-report methodology, but interviewer consistency and neutral questioning were developed to reduce this risk. The next generation of multicentre trials ought to include objective assessment of skills: including observed ability to stimulate infants by watching how they do it and longitudinal follow-up to assess the retention of knowledge and feeding results.

Concerning the impacts on the overall health of the people, the necessity to take an action is urgent. The three most salient interventions seem to be the following ones, the results of this paper provide a concrete evidence that can be used to truly repackaging maternal education as a desired objective, which is a mandate and consequently close the last implementation gap on known preterm feeding interventions.

Limitation

This study includes hospital-based design, which limits generalizability to community setting, and reliance on self-reported questionnaire data. Future studies should focus on multicentered and objective assessment on maternal skills.

CONCLUSION

This study reveals that the prerequisite level of awareness of oromotor stimulation in primipara mothers of preterm newborns is low and 74.6% of all mothers exhibiting poor knowledge despite established benefits for feeding efficiency and neurodevelopment.

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