Feeding and Swallowing in Neonates with HIE: A Descriptive Study

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BACKGROUND

Intrapartum-related complications, including intrapartum hypoxia and subsequent hypoxic ischemic encephalopathy (HIE), are the second highest cause of neonatal deaths in South Africa. For survivors, such complications may be associated with a substantial burden of impairment, including the inability to feed well and swallow safely, thus representing a possible neurological cause of oropharyngeal dysphagia (OPD). HIE may result in disturbances of physiological stability, state regulation, neuromuscular integration, coordinated oral movements, and/or feeding endurance. However, feeding and swallowing characteristics in this population of neonates are not well described in the literature.

OBJECTIVES

To describe the feeding and swallowing profile of neonates with HIE in a neonatal unit in Cape Town, South Africa, in terms of the following:

- Characteristics of oral feeding readiness
- Oromotor skill, oropharyngeal swallowing and clinical signs and symptoms of OPD
- Time taken to reach full oral feeds
- Feeding method at discharge from the neonatal unit.

METHODOLOGY

1. A descriptive, exploratory, longitudinal design consisting of both prospective and retrospective data collection methods was used to examine the feeding and swallowing characteristics in a sample of 52 participants with HIE of varying severities.
2. Clinical feeding and swallowing assessments were conducted for 13 participants using the Neonatal Feeding and Swallowing Assessment Scale (NFAS), and medical folder reviews were conducted for 13 participants.
3. The medical and feeding information was documented using data collection forms, including the feeding management received from the on-site speech-language therapist.
4. Data from both data collection methods were amalgamated onto Excel spreadsheets, and information from medically similar participants was identified and grouped together for descriptive and statistical analysis.

RESULTS

A main effect of oral feeding readiness was indicated with a median of 4 days (p = 0.036), and an interquartile range of 4 – 5 days (standard deviation = 3.7 days). The median number of days to full oral feeds for the sample was 5 days (p = 0.016) with an interquartile range of 4 – 6.8 days (standard deviation = 4.3 days). Participants with a severely abnormal initial aEEG and who did not receive cooling treatment demonstrated the longest average time to oral feeding readiness and, subsequently, to full oral feeds. Participants of all severities presented with feeding and swallowing difficulties primarily in the oral phase of swallowing. Few pharyngeal signs and symptoms of OPD were identified. Most participants (96.2%; n = 50) were discharged on full oral feeds, while the remaining 3.8% (n = 2) were discharged on nasogastric tube feeds (NGT) while awaiting gastrostomy placement.

Table 1: *Time Taken to Oral Feeding Readiness*

	N	Median (days)	IQR (days)	SD (days)	p
OVERALL	50*	4	4 – 5	3.7	0.036
Normal aEEG; not cooled	7	1	1 – 6	2.8	
Severely abnormal aEEG; not cooled	4*	12.5	4.3 – 19.3	7.9	
Moderately abnormal aEEG; cooled	26	4	4 – 5	2.8	
Severely abnormal aEEG; cooled	13	5	4.5 – 5.5	0.9	

**Total N* = 50 (i.e., 52 – 2): 2 participants with a severely abnormal initial aEEG and who were not cooled did not achieve oral feeding readiness.

Table 2: *Time Taken to Full Oral Feeds*

	N	Median (days)	IQR (days)	SD (days)	p
OVERALL	50*	5	4 – 6.8	4.3	0.016
Normal aEEG; not cooled	7	1	1 – 6	5.6	
Severely abnormal aEEG; not cooled	4*	13.5	6.3 – 21.5	7.9	
Moderately abnormal aEEG; cooled	26	5	4 – 6	3.6	
Severely abnormal aEEG; cooled	13	6	5 – 7	1.5	

*N = 50 (i.e., 52 – 2): 2 participants were fed via a NGT at the time of discharge

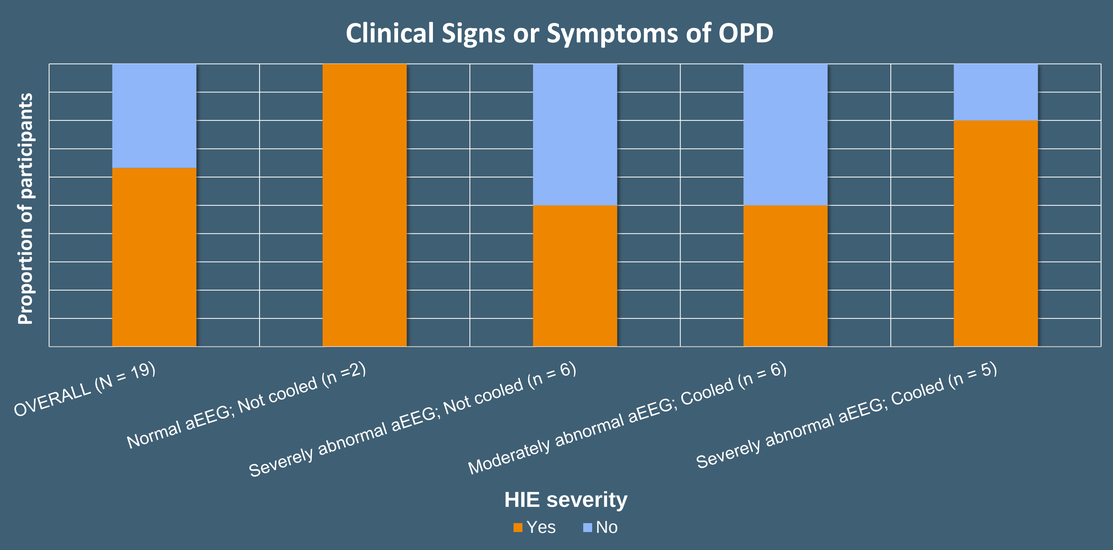

Figure 1: *Proportion of Participants who Presented with Clinical Signs and Symptoms of Dysphagia in the Oral Feeding Assessment (N = 19)*

CONCLUSION

Regardless of severity, neonates with HIE face an increased risk of feeding and swallowing difficulties. The findings highlight that neonates with HIE should be screened by a speech-language therapist for feeding and swallowing difficulties before discharge from hospital. This study contributes to the small body of research on feeding and swallowing difficulties in neonates with HIE, and may guide future research.