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A descriptive evaluation of early feeding development of infants in a Local Neonatal Unit

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Abstract

Purpose: A local neonatal unit undertook a descriptive evaluation of feeding development of infants receiving care so as to identify and maximise effective neonatal team care and support.

Method: A retrospective data review examined infant feeding development from one local neonatal unit. Data were stratified according to gestational birth age and included infant health, post – menstrual age on introduction of oral feeding, oral feeding progression, method of feeding and re-admission to hospital in the first 12 months of life.

Results: A total of 150 infants met the criteria for inclusion in this retrospective review. Infants ranged in age from 23(+0) – 42(+2) gestational birth ages. Number of days on the neonatal unit ranged from 1 – 159 (mean = 25.87) days. Extremely preterm (EPT) infants experienced a significantly longer stay on the neonatal unit, had the highest number of respiratory problems, took significantly longer to achieve full oral feeding and tended to start oral feeding at a significantly later post - menstrual age compared with other infants. A high number of infants needed to access acute services post - discharge from the neonatal unit.

Conclusions: All infants regardless of gestational birth age were at risk of developing feeding problems and hospital re-admissions post neonatal discharge. EPT infants were significantly vulnerable to poor feeding outcomes. Parent and team working is necessary to identify and support complex infants.

Key words: *neonate; neonatal unit; infant swallowing; oral feeding; preterm and term infants*

1. Introduction

Preterm and unwell term infants require specialist multi-disciplinary care and support within a neonatal unit setting. Receiving nutrition, and then learning the skills required for successful oral feeding involving coordination of sucking, swallowing and breathing can be a lengthy process dependent on the associated development of physiological and neurological skills (Jadcherla et al.,2010). Illness and the need for medical intervention can interrupt progress with oral feeding, therefore positive feeding experiences that integrate adequate nutrition, safe feeding and parent confidence is necessary (Burklow et al., 2002). Developing oral feeding can be time consuming prolonging infant and parent time in hospital while feeding skills are established (Lau et al., 2015). Some infants may present with persistent unresolved feeding problems when discharged home necessitating support from the neonatal team including speech & language therapists (SLT) (Harding et al., 2015). One study has estimated that 20.4% infants have persistent feeding difficulties once home, therefore team management of positive early oral feeding experiences for infants and parents although a delicate and complex process is necessary (Hoogewerf et al., 2017).

1.1 Typical preterm infant development

Learning to feed orally is demanding as infants need to learn how to coordinate breathing with swallowing whilst undertaking motor effort (Gewolb & Vice., 2006). In addition to the motor effort of sucking, feeding tolerance requires the maintenance of cardiorespiratory stability and state regulation (McCain., 2003). Infants born preterm rarely coordinate the suck-swallow-breathe cycle required for feeding before 34 weeks gestation (Jadcherla., 2016). Both motor and somatosensory learning is applied when learning to feed, and consistency of feed presentation can influence progress (McGrath & Braescu., 2004).

A few studies have described neonatal populations to identify infant feeding development including initial oral trials, the transition time to achieve full oral feeding, and the post-menstrual age (PMA) on achieving full oral feeding skills, (Dodrill et al., 2008; Jackson et al., 2015; Majoli et al., 2021). Time taken to achieve full oral feeding (FOF) has been identified as ranging from a PMA of 33(+3) weeks (Jackson et al., 2016) to 36(+4) ±2 (+6) PMA (Dodrill et al., 2008). Whereas such studies can provide confirmatory data to support practice, interpretation of data needs to be treated with caution as practice may vary across countries.

1.2 Purpose and aim of the investigation

Introducing oral feeding for infants born preterm or term infants with significant medical needs can be challenging, and is often complicated (Lau et al, 2015). Although infants may be able to feed orally with no additional tube feeding requirements when discharged home, problems with feeding may persist during an infant's early years (Hoogewerf et al., 2017). Preterm infants are at high risk of aspiration, with 40% of preterm infants aged 25 -37 weeks gestational age (GA) identified as aspirating (Uhm et al., 2013) or exhibiting airway protection problems (Lee et al., 2011). To minimise these problems, and to provide positive oral – motor and feeding experiences, SLTs work with families and other members of the neonatal team, often nurses to maximise an infant's feeding abilities (Jackson et al., 2016). Our primary objective in this study was to describe the early feeding history of all infants receiving care on a Local Neonatal Unit (LNU) with a view to identifying key factors that typically inhibit oral feeding progression. Comparisons were made between the oral feeding progress of infants according to their different gestational birth ages during initiation of oral feeding. Other factors including availability of SLT support for the cohort investigated were considered. An evaluation of accident & emergency (A&E) as well as ward admissions in the first year of life, specifically in relation to respiratory problems was undertaken. Although it is difficult to attribute all respiratory problems to aspiration, it was felt important to consider the reason for admission, particularly infants born preterm are at higher risk of aspiration (Lee et al., 2011; Uhm et al., 2013). Findings were considered as part of a service improvement initiative to provide more timely support for infants with oral – feeding problems.

2. Materials and methods

2.1 Design & participants

This investigation was an evaluation of the feeding history of infants admitted to a LNU within an outer city UK population. All infants admitted to the neonatal unit from January 2015 to December 2019 were eligible for inclusion in the data collection. Infants who died within the first four days of life and infants who transferred from another hospital pre-discharge and who were only in the unit for four days or less were excluded. Permission was given by the hospital Research and Development department to undertake data collection as a service improvement evaluation and audit.

2.2 Statistical analysis

Data were analysed using SPSS 20.0 (IBM, Amonk, NY, USA). Baseline data of the whole sample included gender, gestational birth age, key health needs of infants, number of multiple births, numbers of first pregnancies and numbers of first live births. Data were presented using means, standard deviations, percentages, ranges, confidence intervals and where appropriate, *p* values.

Data were stratified according to GA into four groups: extremely preterm (EPT), very preterm (VPT), mid – to late preterm (MLPT), and term (TM). Data were descriptive, including means, medians, standard deviations, ranges, percentages, ranges and confidence intervals as relevant.

In-patient infant feeding characteristics included averages, ranges and percentages in relation to infants requiring increased respiratory support for oral feeding, the average time taken to achieve full oral feeding, method of feeding, type of feeding, days taken to achieve full oral feeding and the number of infants who received SLT support. In addition, data for re-admission reason and if the reason was feeding or respiratory in origin to either the hospital ward or children's accident and emergency were included using actual numbers and percentages.

Comparisons were made using Pearson's correlation analysis between birth weight and gestational birth age, gestational birth weight and post menstrual age (PMA) at start of oral feeding and time to achieve full oral feeding. The t-test was used to compare gestational birth age and gender. Due to small numbers within each infant gestational birth age category, Kruskal – Wallis tests were performed to compare infant gestational birth age within all four groups in relation to PMA at start of oral feeding, when full oral feeding was achieved and number of days in the neonatal unit according to gestational birth age.

3. Results

3.1 Sample demographics

A total of 150 infants in a LNU were included in this analysis. Infants ranged from gestational birth ages of 23 (+0) to 42(+2) weeks, with a mean gestational birth age of 33 (+0) weeks (Table 1). An independent-samples t-test was conducted to compare the distribution of infants by gestational birth age and gender. There was no significant difference when comparing gestational ages between the sexes with males (M = 32.58, SD = 4.73) and females (M = 32.93, SD = 4.79); t(148) = -.45,p = .90 two tailed; the magnitude of the differences in the means (mean difference = -.35, 95%CI: -1.189 to – 1.18) was very small (eta squared = .0013). A strong positive correlation was identified between gestational birth age and birth weight, i.e. the older the infants at their birth date, the higher the birth weight: Pearson's r = .916, p <.001.

Put Table 1 about here

3.2 Stratification and characteristics of infants according to gestational birth age

Infants were categorised into groups according to gestational birth ages: Extremely Preterm (EPT), Very Preterm (VPT), Moderate to Late Preterm (MLPT) and Term (TM), (range 23(+0) weeks - 42(+2) weeks (Table 2). The EPT group had the least number of participants (n = 26) and the MLPT group was the largest (n = 59). The TM group had the highest number (n=9) of infants with low weight for their gestational birth age, and the VPT group had the most infants (n =3) who had high birthweights for GA. The EPT group all (100%) required more than 10 days respiratory support with over half (57%) of the VPT infant group requiring additional respiratory support. The MLPT and TM groups had lower percentages of respiratory support at (3%) and (8.5%) respectively. The MLPT group recorded the highest number of multiple births (n = 17), and this group also had the most mothers experiencing their first infant (n =18).

A significant difference in number of days spent in the neonatal unit was noted between the four gestational age infant groups (EPT, n = 26; VPT, n = 30; MLPT, n = 59; TM = n = 35), $\chi 2$ (3, n = 150) = 48.56, p = .001 (Kruskal-Wallis). The EPT infants experienced a longer stay in neonatal care with a higher median score (*Md* = 54) compared with the other groups (VPT, *Md* = 33.5; MLPT, *Md* = 14; TM, *Md* = 9).

Put Table 2 about here

3.3 Health characteristics

Respiratory conditions presented as the most prevalent medical problem, with all of the EPT infants identified as having respiratory needs at varying periods during their stay on the neonatal unit. Overall, the EPT group appeared to have the highest number of core conditions except jaundice (Table 3 & Figure 1).

Put Table 3 & Figure 1 about here

3.4 Neonatal Unit infant feeding development

The impact of gestational birth age on time taken to achieve full oral feeding and PMA at the start of oral feeding was compared, with a significant difference in days to achieve full oral feeding between the groups. (EPT, *n* = 26; VPT, *n* = 30; MLPT, *n* = 59; TM = *n* = 35), $\chi 2$ (3, n = 150) = 41.74, p = .002 (Kruskal-Wallis). The EPT infants (*Md* = 7.5; 4 – 130 days) and VPT infants (*Md* = 12.5; 2 – 52 days) required longer to achieve full oral feeding compared with the MLPT infants (*Md* = 6; 1 – 27 days) and TM infants (*Md* = 4; 0 – 24 days).

PMA at the start of oral feeding was significant between the four groups (EPT, *n* = 26; VPT, *n* = 30; MLPT, *n* = 59; TM = *n* = 35), $\chi 2$ (3, n = 150) = 55.37, p = .001(Kruskal-Wallis). EPT infants were of an older PMA (*Md* = 34(+2)) in comparison with their VLT (*Md* = 32(+5)), MLPT (*Md* = 33(+4)) and TM (*Md* = 39(+2)) infant peers.

A weak positive correlation was noted between birthweight and PMA at the start of oral feeding: Pearson's *r* = .125, (n = 150), *p* .127, and a moderate negative correlation was identified between birthweight and time taken to achieve full oral feeding: Pearson's *r* = -.329 (n = 150), *p* <.001.

A large positive correlation was identified between SLT involvement and time taken to achieve full oral feeding, i.e. with support from a SLT, time to acquire skills to manage full oral feeding were likely to be quicker with than without support: Pearson's *r* = .52 (n = 150), *p* < .001.

A weak negative correlation was noted between infants with increased good health requiring less intervention from a SLT: Pearson's *r* = -.15. (n = 150), *p* = .05. A weak negative correlation was identified between infants who had more than 10 days respiratory support were more likely to require SLT support: Pearson's *r* = -.24. (n = 150), *p* = .003 **p<.001 (2 tailed).

Infants in all groups experienced a mixture of feeding methods, from exclusive breast feeding, mixed breast and bottle, bottle only and tube feeding. Infants' feeding characteristics are summarised in Table 4.

Put Table 4 about here

3.5 Post neonatal discharge hospital re-admissions

All infant groups required access to A & E and the ward post-discharge from the neonatal unit, the highest percentage being the EPT group (n = 18; 70%) for A & E and the MLPT group for ward access (n = 59; 72%) (Table 5).

Put Table 5 about here

Discussion

Within our sample, EPT infants had the most difficulties overall, requiring significant levels of support from neonatal team members including SLTs both when on neonatal unit, and when discharged home. EPT infants' high level of need is supported by other studies that identify vulnerability to interrupted or delayed oral - feeding implementation (Dodrill et al., 2008; Hogewerf, et al.,2017; Majoli et al., 2021). Interestingly, the PMA on onset of oral feeding for the EPT group in our study was later than the VPT and MLPT groups at 33(+4) weeks possibly due to sustained need for oxygen or additional health needs, but this difference was not significant. All preterm infants in our study had average introductory oral feeding experiences within 34 – 36 PMA which is typical given that rhythmic breathing is developing at this time (Bertoncelli et al., 2012).

A weak positive correlation was noted between birthweight and PMA at the start of oral feeding. Low birthweight can be a risk factor for poor feeding development (Jadcherla et al., 2017). Decision making about whether to support some oral feeding when infants receive oxygen is varied, with mixed concerns about ensuring a safe swallow in contrast with ensuring that the critical period for oral - sensory development is not impaired (Jadcherla.,2016). Maturation of oral skills necessary for successful oral feeding for infants with respiratory problems is challenging as this group typically demonstrate weak sucking pressures, short suck burst duration and low feeding efficiency which impact on oral feeding development (Mizuno & Ueda., 2007). The TM group had the highest percentage (26%) of low weight for gestational age infants, and therefore it might have been anticipated that this group would also have the highest percentage of infants unable to feed orally. This was not the case, with the EPT group yielding the highest percentage (31%) of infants unable to feed orally.

Overall rates of breastfeeding in the total sample were low. Only a small number of infants within all GA groups received cup feeds. Cup - fed infants are more likely to develop exclusive breast feeding in comparison with non-cup fed peers (Yilmaz et al., 2015). Supplemental methods such as pacifiers and bottles can reduce the success of exclusive breastfeeding (Howard et al., 2003). Pre-feeding plans, such as using pacifiers for non-nutritive sucking were not available, but variable methods could have impacted on breast - feeding establishment (Jadcherla & Bhandari, 2017). For all infants in our sample, bottle feeding was one of the main methods of oral feeding.

A mixture of EBM and formula were the most common fluids given. Some infants require specialised formulas for various reasons including infant feeding intolerance but for the majority of infants, health benefits are best obtained from breast milk (Quigley et al., 2019). Barriers to exclusive breastfeeding were not investigated in this study but would be interesting to identify in future. One factor that could have reduced numbers of infants' abilities to fully breast – feed is one frequently cited in the literature, namely lack of space for parents to room - in and be available for all feeds, (Theurich et al.,2021). The term infants had the highest rate of breastfeeding and of formula feeds.

Infants had a range of medical needs associated with delaying feeding development with 51.3% of the sample experiencing respiratory problems. The MLPT infants had the highest prevalence of respiratory problems. Interestingly, this group also had the lowest rate of SLT support whilst on the wards. Senekki-Florent & Walshe (2021) found preterm infants with significant feeding disorders primarily displayed respiratory difficulties which was not surprising as respiratory conditions directly impact on oral feeding integrity (Mizuno et al.,2007).

The EPT group appeared to have the highest number of core conditions except jaundice. The incidence of feeding and swallowing problems is more likely in infant populations who experience a higher number of comorbidities (Jadcherla, 2016). In our cohort, respiratory difficulties were the most common reason for A&E and ward admission within the first year following discharge from the LNU. Premature infants are at a higher risk of aspiration (Uhm et al., 2013) and although it cannot be assumed that all respiratory admissions are attributable to aspiration, it would be sensible to investigate all respiratory illness with the addition of a swallow screen by a SLT, particularly where there are repeated admissions.

Some infants were unable to achieve full oral feeding across all groups, the highest number being the EPT group (31%) unable to feed orally on discharge. The large positive correlation identified between SLT involvement and time taken to achieve FOF would be worthy of further investigation to identify how neonatal nurses and SLTs could provide support on discharge. More than half (58%) of the EPT group received SLT support when home. SLT support was given mainly to the EPT infants in contrast with the MLPT infants who received the lowest level of support on the unit. The MLPT infants had a greater percentage of admissions to A&E, for feeding issues specifically, than the EPT infants, as well as a greater total ward admission.

Due to increases in survival of infants born preterm, there are increasingly more instances of identified long term oral - feeding problems (Viswanathan & Jadcherla., 2020). Neonates require support from both nurses and SLTs to help manage complex feeding problems on the NNU and when home (Harding et al., 2015).

Conclusions

The authors acknowledge that a limitation of this study is that findings relate to one unit, and therefore must be treated with caution. However, this review found that developing oral feeding competence and subsequent feeding problems can affect infants of any gestational birth age and that overall, infants remain vulnerable and at risk of hospital re-admissions once discharged home from the neonatal unit. Data presented from one unit has highlighted the need for accurate reporting in clinical notes of initial oral trials and also clear and sustained multidisciplinary team working to support infants, both when they are on the unit, and when they go home. To enable families to support infants in their care, support should additionally be available from the neonatal team if readmissions occur post discharge.

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Table 1: General characteristics of whole infant sample

Characteristics N = 150	All infants mean ± SD or n (%)	Male n = 81 (54%)	Female n = 69 (46%)
Gestational birth age (weeks)	33 ± 4.73 Range: [23+0 – 42+2] 95% CI: 32.7447±0.757 [32(+2), 34 (+1)] Margin of error = 0.757	32.5 ± 4.7	32.9 ± 4.7
Birthweight characteristics (g)	1978.49±949.95 Margin of error = 152 Range: [500 – 5180g] 95% CI: 1,978.49±152 [1830, 2130] Total low birthweight = 18 (%) Total high birthweight = 12(%)	Range: [500 – 5180g]	Range: [556 – 4000g]
Multiple births	Single births n = 122 (81.3%) Twin births n = 28 (18.7%) Triplet births n = 1 (0.7%)		
Days spent in NNU (days)	25.87 ± 25.93 Range: [1 – 159] 95% CI: 28.87±4.151 (±16%) [21.719 – 30.021]		

Table 2: Stratification of data according to gestational birth age

Infant characteristics	EPT (n = 26)	VPT (n = 30)	MLPT (n = 59)	TM (n = 35)
Gestational birth age (range)	23(+0) – 27(+6)	28 (+0) – 31 (+6)	32(+0) – 36(+5)	37(+1) – 42 (+2)
Mean	25 (+5)	29(+1)	33(+6)	39(+1)
SD	1.355	1.211	1.273	1.548
CI (95%)	25(+5)±0.5 [25,26]	29(+1)±0.4 [29,29(+5)]	33(+6)±0.3, [33(+3),34(+2)]	39(+2)±0.5 [39(+1), 39(+6)]
Margin of error	0.521	4.434	0.325	0.513
Gender:				
Male	15 (58 %)	18 (60%)	30 (51%)	17 (49%)
Female	11 (42%)	12 (40%)	29 (49%)	18 (51%)
Weight range (g)	500 – 1140	809 – 2174	1260 – 3296	2194 – 5180
Male weight range	500 – 1100	940 – 2174	1260 – 3296	2320 – 5180
Female weight range	556 – 1140	809 – 2080	1270 – 2975	2194 – 4000
Mean	770.1923	1356.5333	2080.1017	3232.7429
SD	172.0174	303.0785	484.3668	606.3683
CI (95%)	770.1923±66.120 (±8.6%) [704.072 ,836.312]	1356.5333± 108.453 (±8%) [1248.080,1464.987]	2080.1017 ± 123.594 (±5.9%) [1,956.508, 2,203.695]	3232.7429 ±200.886 (±6.2%) [3,031.856, 3433.629]
Number infants with low weight for gestational birth age (%)	2 (8%)(Both male)	3(10%)(Two males, 1 female)	6 (10%) (Four males, two females)	9 (26%) (Five males, four females)
Number of infants with high weight for gestational birth age (%)	1 (4%)(Female)	3 (10%) (All male)	2 (3%) (One male, one female)	2 (8%) (One male, one female)
Multiple births	4 (twin) (13%)	7 (twin) (23%)	17 (twin) (48%)	1(triplet) (3%)
Number of first pregnancies (%)	8 (31%)	10 (33%)	18 (30.5%)	10 (28.5%)
Number of first live births (%)	13 (50%)	12 (40%)	27 (46%)	20 (57%)

More than 10 days on respiratory support (%)	26 (100%)	17 (57%)	2 (3%)	3(8.5%)
Number of days spent in NNU	Mean = 55.153 SD = 40.8290 95%CI 55.1538±15.7 [39.5,70.9]	Mean = 32.966 SD = 18.7699 95%CI 32.9666±6.72 [26.2,39.7]	Mean = 17.8983 SD = 13.6238 95%CI 17.8983±3.48 [14.4,21.4]	Mean = 11.4 SD = 9.1368 95%CI 11.4±3.03 [8.37,14.4]

(%) within identified group

EPT = Extremely preterm

VPT = Very preterm

MLPT = Moderate to late preterm

TM = Term

Table 3 : Identified health needs of infants at birth

Health needs	Total (N=150)
Respiratory conditions	77 (51.3%)
Acquired neurological disorders	18 (12%)
Heart conditions	24 (16%)
Significant gut disorders	13 (8.6%)
Specific congenital disorders	9 (6%)
Cranio-facial conditions	5 (3.3%)
Conditions acquired due to social problems (e.g. FAS)	2 (1.3%)
Jaundice	22 (14.6%)

Table 4: Summary of in - patient neonatal unit infant feeding development

Infant characteristics	EPT (n = 26)	VPT (n = 30)	MLPT (n = 59)	TM (n = 35)
Average PMA introduction to oral feeding	35(+4)	33(+5)	33(+6)	37(+6)
Range (PMA)	32(+0) – 44(+4)	31(+1) – 38(+3)	32(+1) – 36(+5)	37(+0) – 42(+1)
Number needing respiratory when starting oral feeding	13 (50%)	7 (23%)	0 (0%)	3 (8.6%)
Average time taken to full oral feeding (days)	23.5	14.67	7.05	2.88
Median	7.5	12.5	6	4
Range (days)	4 – 130	2 -52	1 – 27	0 -24
Nil by mouth (NBM)(%)	8 (31%)	5 (17%)	4 (7%)	8 (23%)
NBM range (PMA)	23(+0) – 27(+6)	28(+2) – 31(+0)	34(+1) – 36(+5)	37(+0) – 42(+2)
Average PMA age at full oral feeding	35(+4)	33(+5)	33(+4)	38 (+1)
Median	34(+2)	32(+5)	33(+0)	39(+2)
Range	33(+6) – 51 (+0)	33(+0) – 42 (+2)	33 (+0) – 39 (+3)	37(+5) – 42 (+3)
Method of oral feeding*:				
Breast	0 (0%)	1 (3.5%)	2 (3%)	6 (17%)
Breast + cup	0 (0%)	1 (3.5%)	0 (0%)	1 (3%)
Breast + cup + bottle	4 (15%)	6 (20%)	6 (11%)	3 (9%)
Breast + bottle	8 (31%)	9 (30%)	26(44%)	5 (14%)
Bottle	9 (35%)	10 (33%)	22 (38%)	13 (37%)
Not reported	5 (19%)	3 (10%)	3 (4%)	7 (20%)
***Infants who may have become NBM initial oral trials included**				
Type of feed:				
EBM	5 (19.5%)	6 (20%)	8 (14%)	8 (23%)
Formula	7 (27%)	5 (16.5%)	12 (20%)	13 (37%)
EBM + formula	11 (42%)	14 (47%)	38 (64%)	11 (31%)
Not reported	3 (11.5%)	5 (16.5%)	1 (2%)	3 (9%)
	8 (31%)	5 (17%)	4 (7%)	8 (23%)

Number of infants unable to achieve full oral feeding (%)				
Number of infants who received SLT support on the neonatal unit (%)	9 (35%)	5 (17%)	5 (8%)	10 (28.5%)
Number of infants who received SLT support when discharged home (%)	15 (58%)	9 (30%)	14 (24%)	13 (37%)

(%) within identified group

*PMA = post menstrual age

**SLT Speech and language therapist

EPT = Extremely preterm

VPT = Very preterm

MLPT = Moderate to late preterm

TM = Term

Table 5: Infant readmission history (first 12 months of life) post - discharge from neonatal unit

Infant characteristics	EPT (n = 26)	VPT (n = 30)	MLPT (n = 59)	TM (n = 35)
<u>**Admission to A&E:**</u>				
Total (%)	18 (70%)	17 (49%)	28 (47%)	18 (51%)
Individual ad.	10 (38%)	8 (23%)	13 (22%)	9 (25.5%)
Multiple ad.	8 (31%)	9 (26%)	15 (25%)	9 (25.5%)
<u>**Reason for A&E admission:**</u>				
Respiratory	12 (46%)	14 (46%)	19 (32%)	11 (31%)
Feeding	1 (4%)	2 (6.5%)	3 (6%)	2 (6%)
Other	6 (23%)	1 (3%)	1 (2%)	4 (11%)
<u>**Admission to ward:**</u>				
Individual ad.	13 (50%)	21 (60%)	48 (72%)	22 (55%)
Multiple ad.	13 (50%)	14 (40%)	19 (28%)	18 (45%)
Total	26	35	67	40
<u>**Reason for ward admission:**</u>				
Planned ad.	8 (31%)	4 (13%)	0 (0%)	4 (11%)
Respiratory	21 (81%)	27 (90%)	40 (68%)	21 (60%)
Feeding	3(11.5%)	4 (13%)	3 (6%)	3 (8.5%)
Other	2 (8%)	4 (13%)	18 (30.5%)	12(34%)
Number of infants who received SLT support at follow up (%)	17 (65%)	11 (37%)	15 (25%)	17 (48.5%)

(%) within identified group

EPT = Extremely preterm

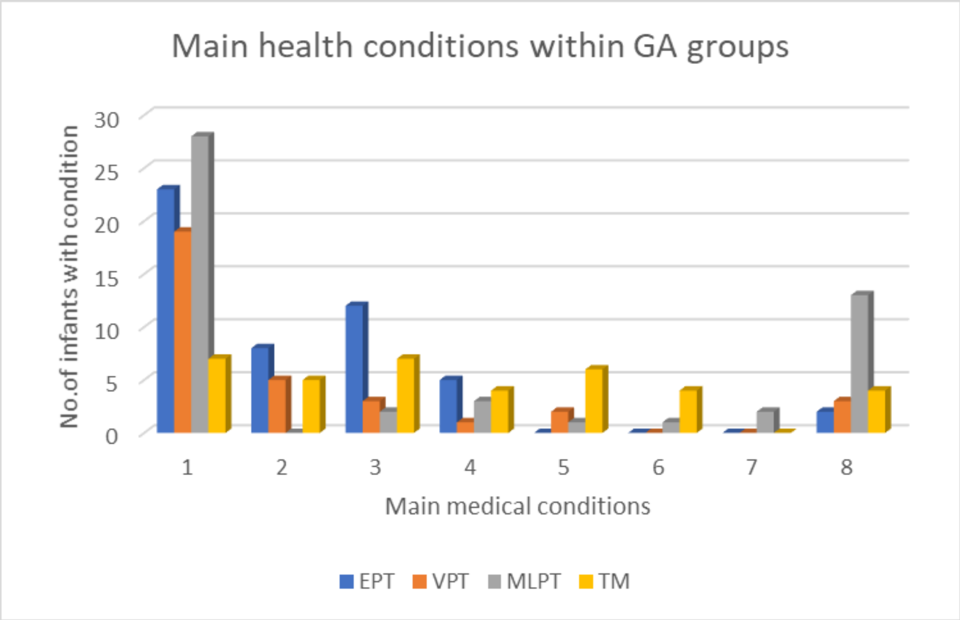
VPT = Very preterm

MLPT = Moderate to late preterm

TM = Term

SLT = Speech and language therapist

Figure 1: Identified health needs of infants at birth according to stratified gestational age



1 = Respiratory conditions

2 = Acquired neurological disorders

3 = Heart conditions

4 = Significant gut disorders

5 = Specific congenital disorders

6 = Cranio-facial conditions

7 = Conditions acquired due to social problems (e.g. FAS)

8 = Jaundice