# ORAL AND NON-ORAL SENSORIMOTOR STIMULATION IN PRETERM INFANTS: BIBLIOGRAPHIC REVIEW

## *Estimulação sensoriomotora intra e extra-oral em neonatos prematuros: revisão bibliográfica*

**Esther Ferreira Lemes [(1)], Thais Helena Marçal Morais Silva [(1)], Aline de Morais Arieta Correr [(1)], Elizabeth Oliveira Crepaldi de Almeida [(1)], Karen Fontes Luchesi [(2)]**

**ABSTRACT**

Prematurity is one of the most prevalent factors in children's hospital. The speech therapy performed in hospitals focusing on premature newborn has gained more space. This intervention had as main purpose the detection of problems related with feeding and provides solutions to newborns that use enteral tubes due to organic immaturity. The use of techniques has been exploited aiming the maturation of oral sensorimotor system in a more accelerated way, besides a safe transition to full oral feeding. The purpose of this study is to conduct a systematic review of national and international literature in order to list the different techniques and elucidate their effectiveness to the maturation of oral sensorimotor system in preterm neonates who remain in hospital. According to the literature, the most used techniques in Brazil were the non-nutritive sucking with minimal gloved finger or orthodontic pacifier. In other countries, the most cited techniques were non-nutritive sucking on pacifier and stimulation of the oral sensorimotor system. The techniques used in Brazil and abroad have reflected positively on the development of oral functions of neonates. Taking into account the need to promote exclusive breastfeeding, recent publications have shown alarming and disturbing percentage of use of synthetic nozzles for stimulation in neonatal intensive care.

**KEYWORDS:** Infant, Newborn; Infant, Premature; Feeding; Deglutition Disorders; Intensive Care, Neonatal; Breast Feeding

## INTRODUCTION

Speech therapy performed in hospitals focusing newborns under risk has reaching more space. It aims to detect problems and propose solutions to neonates presenting difficulties with oral feeding (OF), due to their organic immaturity[1].

The speech pathology therapist is part of the minimum team of professionals working with newborns under risk in Neonatal Intensive Care Units (NICU). Their participation is determined by the Ministry of Health under regulation nº 930,in force since May 10thof 2012[2]. The professionals evaluates newborns that do not coordinate sucking, swallowing and breathing (SSB), lethargic neonates with weak sucking, apnea, declining saturation levels while feeding, gastroesophageal reflux episodes, coughing while or after swallowing and those who are on gastric tube[3].

Prematurity is one of the main factors that provoke neonatal complications, because retains newborn's (NB) natural development. Besides, the preterm infant is inclinedto other future complications, as cognitive function development compromising[4].

According to World Health Organization (WHO), the preterm newborn (PTNB) or premature is the one that was born before the 37th gestational week. The classification for those neonates is based on the gestational age (GA),birth weight, on the relation weight and GA and also corrected gestational age (CGA). These data are used on the evaluation of baby's size and development after the 40th week[5].

(1) Pontifícia Universidade Católica de Campinas, Campinas, São Paulo, Brasil.

(2) Secretaria de Urgência e Emergência da Prefeitura Municipal de Hortolândia, Hortolândia, São Paulo, Brasil.

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The intrauterine fetal growing is fast and the organs are constantly through cellular division necessary to complete development, therefore the prematurity or interruption of the proper gestational time exposes the NB to factors that compromise their pulmonary maturation, the oral sensorimotor system (OSS) and the thermoregulatory function, in addition to restrict the nutritive reserve of fat due to anatomic-physiologic issues[5].

Other authors complement that deficiency of organic maturity causes incoordination in sucking, swallowing and breathing (SSB) and submit the PTNB less than 34 gestational weeks to the use gastric tube as feeding alternative. This invasive procedure is necessary, but retain the infant of receive sensorial stimuli important for OSS development[1].

The speech therapy in NICU is based on the stimulation of the stomatognathic system to fit oral functions, aiming to enable NB, as soon as possible,to be fed orally and to be placed in maternal breast[1]. The early stimulation of these functions on PTNB presents satisfactory results globally[6].

Knowing the techniques used in children's hospital and also of the impact in child's life is essential to promote exclusive breastfeeding, contributing not only to early discharge of the preterm neonate, but also to a proper alimentation, safe and effective.

Regarding the speech pathology therapy, this article aims to develop the systematic review of national and international literature in order to stablish different techniques of OSS maturation and discuss about their effectiveness in preterm neonates that remain in hospital environment.

## METHODS

It is a systematic review of national and international literature. In September of 2013 were selected articles published in journals indexed on the basis "Latin-American and Caribbean Center on Health Sciences Information" (LILACS), "Scientific Electronic Library" (SciELO) and "Medical Literature Analysis and Retrieval System Online" (MEDLINE).

Afterconsulting Health Science Descriptors (DECs), it was selected the keywords: newborn, oral stimulation and feeding. The descriptors were inserted isolated and combined in all possible manners, respecting the restrictors: humans, newborns and publication language, Portuguese or English.

Two researchers read the texts and it was selected only articles that emphasize techniques applied in neonatal hospital environment with preterm newborns, published among 2006 and 2013.

Data were analyzed qualitatively andquantitatively. The qualitative analysis was made by disposing the results in the following categories: techniques used in Brazil; techniques used in other countries; techniques consider being effective; techniques consider being not effective or not statistically significant. The classification regarding the effectiveness of the techniques was justified in the conclusion of the publications analyzed.

The quantitative analysis was based on obtaining the absolute and relative frequency (percentage) of the results classified on the categories above cited.

It was disqualified articles published out of the period proposed, repeated articles, not available-online or that did not attend the research objectives.

## LITERATURE REVIEW

### General View

First, it was found 47 articles, though, only 17 fulfilled the inclusion criteria and they were analyzed (Figure 1).

The majority of the studies, both conducted in national and international scope, had their sample constituted from the subjects with prematurity, absence of head and neckmalformation, genetic syndromes, intracranial hemorrhage level III and IV, perinatal asphyxia,bilirubin encephalopathy, sepsis, severe bronchodysplasia, periventricular Leucomalácia and necrotizing enterocolitis.

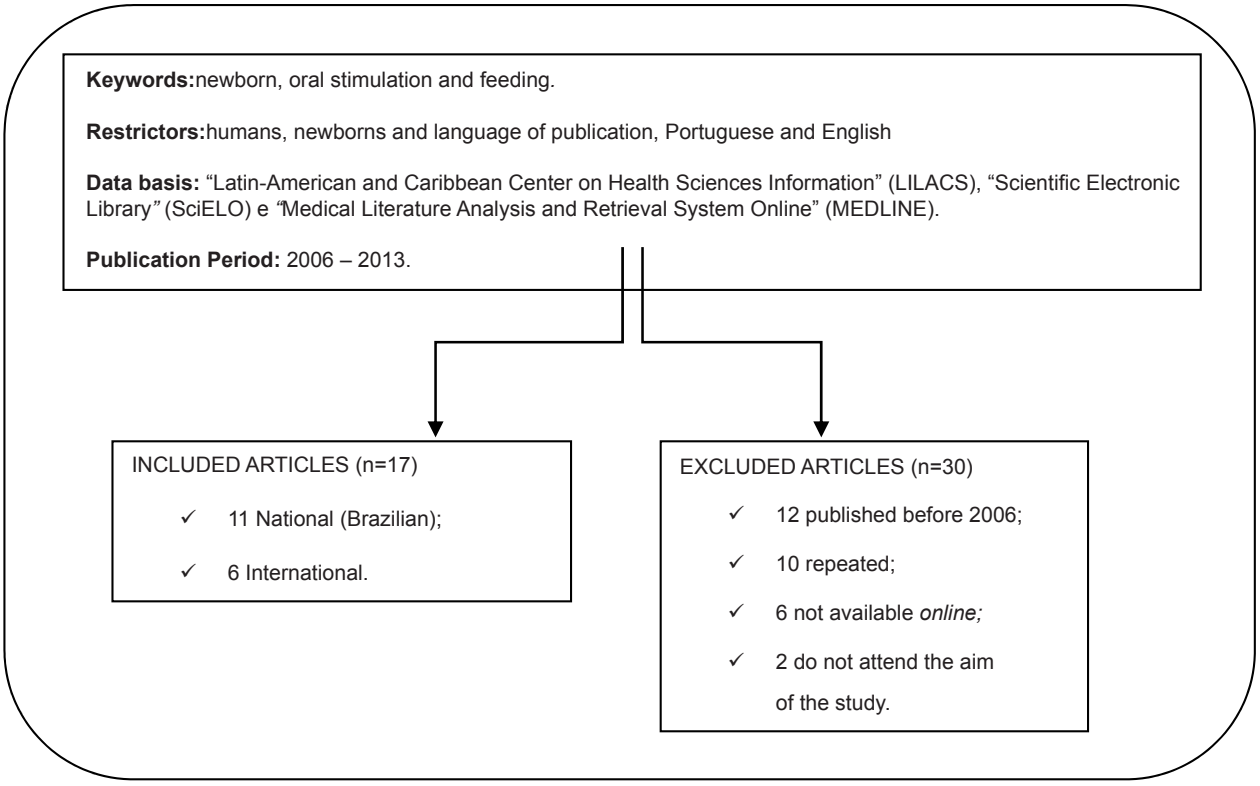


**Figure 1 – Research Strategy and Publications Selection**

Among national articles it was evident the practice of non-nutritive sucking (NNS) with gloved finger as main technique applied in NICUs. Also, the NNS using synthetics nipples and the nutritive sucking (NS) with bottle presented to be an alternative to oral stimulation and feeding. Those interventions were cited as the most applied and the NNS in empty breast and the NS in maternal breast are the techniques less referred by authors (TABLE1).

The international articles mentioned the NNS technique with synthetic nipple and the oral sensorimotor stimulation as the most present in the stimulation of preterm neonates. The NNS with synthetic nipple also was performed with new technologic device, a pressured electronic pacifier named *NTrainer*® (Table 2).

**Table 1 – National Journals Citation of techniques performed with preterm newborns in neonatal therapy cares (2006-2013)**

| Techniques | N° of citation in articles | Percentage (%) |
|---|---|---|
| NNSin gloved finger | 11 | 34 |
| NNSin orthodontic pacifier | 6 | 18 |
| NSin bottle | 6 | 18 |
| Oral motor stimulation | 4 | 12 |
| NSin cup | 2 | 6 |
| NSin maternal breast | 2 | 6 |
| NNSin empty breast | 1 | 3 |
| NSfinger tube | 1 | 3 |
| Total | 33 | 100 |

Legend: NNS=Non-nutritive suction; NS=Nutritive Suction.

**Table 2 – International Journals Citation of techniques performed with preterm newborns in neonatal therapy cares(2006-2013)**

| Techniques | N° of citation in articles | Percentage(%) |
|---|---|---|
| NNSwith pacifier | 4 | 29 |
| Oralsensorimotor stimulation | 4 | 29 |
| Tactile-kinesthetic stimulation | 2 | 14 |
| NNSelectronic pacifier (*NTrainer*®) | 2 | 14 |
| NNSgloved finger | 1 | 7 |
| NSin bottle + oral support | 1 | 7 |
| Total | 14 | 100 |

Legend: NNS=Non-nutritive suction; NS=Nutritive Suction.

Contrary to Brazil the NSS in gloved finger was less cited by international authors. The natural feeding or techniques similar to this practice was not described in the international articles analyzed.

Although there are differences on the described interventions in national and international articles, all the studies emphasized that techniques closer to natural feeding are rarely used with preterm neonates.

Most of the analyzed studies agreed that the oral stimulation in PTNB provides the acceleration in the maturation of oral functions and, therefore, decreasehospitalization time (Table 3).

**Table 3 – Efficacy of combined techniques for maturation of the oral sensorimotor system applied in preterm neonates, according bibliographic review (2006-2013)**

| Authors (publication year) | Applied techniques | Conclusion |
|---|---|---|
| Neiva and Leone (2006) | NNSgloved finger, NNSpacifier, NS bottle | E |
| Boiron et.al (2007) | NNSgloved finger, NSbottle with oral support, oral sensorimotor stimulation | E |
| Neiva and Leone (2007) | NNSgloved finger, NNSpacifier | NE |
| Rocha and Delgado (2007) | NNSgloved finger, NNSpacifier, NSbottle, NSmaternal breast | E |
| Barlow et.al (2008) | NNSelectronic pacifier (*NTrainer*®) | E |
| Pimenta *et.al*. (2008) | NNSgloved finger, NNSpacifier | E |
| Poore et.al (2008) | NNSelectronic pacifier (*NTrainer*®) | E |
| Bauer *et.al*. (2009) | oral sensorimotor stimulation, NNSgloved finger | E |
| Delgado (2009) | NNSgloved finger, NNS pacifier, NSbottle | E |
| Yamamoto *et al.* (2009) | NSbottle | NE |
| Hwang et.al (2010) | NNS pacifier, oral sensorimotor stimulation | NE |
| Yamamoto *et al.* (2010) | NNSgloved finger, oral sensorimotor stimulation | E |
| Costa *et al.* (2011) | oral sensorimotor stimulation, NNSgloved finger | NE |
| Fucile et.al (2011) | oral sensorimotor stimulation, tactile-kinesthetic stimulation, NNS pacifier | E |
| Medeiros and Bernardi (2011) | NNSgloved finger, NNSempty breast, NSmaternal breast, NScup, NSbottle | E |
| Calado and Souza (2012) | oral sensorimotor stimulation, NNSgloved finger, NSbottle, NSfinger tube | E |
| Fucile et.al (2012) | oral sensorimotor stimulation, NNSgloved finger, tactile-kinesthetic stimulation(body and limbs) | E |

Legend: E=Effective; NE= Noteffective or not significant; NNS=Non-nutritive suction; NS=Nutritive Suction.

The effectiveness of the techniques applied was quantified in Table 4. The NNS with gloved finger once more is presented as ahead the other techniques, characterizing the benefits for OSS maturation in PTNB. Few authors relate the improvement on the PTNB oral pattern exclusively to natural development process, which suggest the importance of speech therapy intervention on these babies.

**Table 4 – Number of publications evaluating the efficacy of the techniques for maturation of the oral sensorimotor system, according to the conclusion of the authors studied.**

| Techniques | Effective (N) | Not Effectiveor Not Significant (N) |
|---|---|---|
| NNSin gloved finger | 9 | 2 |
| NNS pacifier | 6 | 2 |
| NNSelectronic pacifier | 2 | 0 |
| NNSempty breast | 1 | 0 |
| NScup | 2 | 0 |
| NSmaternal breast | 2 | 0 |
| NSfinger tube | 1 | 0 |
| NSbottle | 3 | 2 |
| NSbottle + oral support | 1 | 0 |
| oral sensorimotor stimulation | 5 | 2 |
| tactile-kinesthetic stimulation | 2 | 0 |
| Total | 34 | 8 |

Legend: NNS=Non-nutritive suction; NS=Nutritive Suction.

**National View**

The literature describe the NNS stimulation as benefic since it fits the oral muscles, contributes to NB's weight gain, stables the awareness states and simplify the digesting process, enabling to anticipate the transition of feeding tube to OF[7].

The speech therapy intervention on babies under risk is initiated usually by NNS to evaluate and stimulate sucking. The technique also has the objective of observe the rhythm, strength and the number of bursts accomplished by babies[8].

The NNS is normally performed using the little finger gloved. This technique is described as effective to promote NB oral reflexesmaturation, providing proper coordination on sucking, swallowing and breathing[3]. The NNS also helps the cerebral oxygenation, soothes and improve the organization of preterm babies[6].

The literature review highlighted that NNS in little finger gloved associated to intra oral manipulation-accelerates the transition of tube to oral via, without compromise the weight gain in preterm newborns. To verify the effectiveness of this intervention on PTNB is necessary sensible observations of breathing and heart frequency, time between tube and complete oral feeding and weight gain.

The intervention enhanced neonates maturation process and muscles coordination used in sucking[9,10]. The NNS in gloved little finger and oral motor stimulation of OSS enhance the responses of oral reflexes, the NS pattern and the benefits of oral diet, contributing to exclusive breastfeeding[11].

Pimenta *et al.*[12] used NNS technique in little finger gloved to evaluation and stimulation of 98 PTNB of very low weight and concludedthere was significant benefits to those NB.

Rocha and Delgado[13] discussed the oral-tactile stimulation in PTNB suffering of gastroschisis (gastric pathology) associated to prematurity. Authors concluded the NNS in finger associated gloved to non-oral stimulation provided adequacy of the stomatognathic system and contributed to promoting breastfeeding.

Delgado[14] reports positive results for the transition of gastric to OF by stimulation the PTNB stomatognathic system presenting genetic syndromes (Popliteal Pterygium Syndrome). The results were not attributed specifically to the technique of NNS with little fingergloved, but to the association to orthodontic pacifier and bottle sucking.

Costa *et al.*[15] investigated the impact of oral-tactile stimulation associated to oral and non-oral manipulation on heart and breathing frequencies,

transference index (value obtained from dividing the ingested volume by the prescribed volume in milliliters), time on the transition gastric feeding to exclusive oral feeding and PTNB weight gain; the conclusion was among the 13 stimulated infants and the 15 of control group there were no statistically significant differences.

Bonifácio[16] also cited the NNS in gloved finger or the oral-tactile stimulation associated to oral and non-oral manipulationas promoting the coordination of the SSB, not compromising the behavioral state of babies and contributing to a better neurological organization.

It is preconized to perform the oral and non-oral stimulation before the NB feeding time and the sucking stimulation occurs during gastric feeding so the baby associates satiation to the sucking act. Some authors[6,12,13] defend the usage of gloved finger and orthodontic pacifier in this interventions.

Delgado *et al.*[14] used the NNS technique with little finger gloved only to evaluate the PTNB pattern of sucking. Focusing the development of the OSS they choose to use orthodontic nipples as main stimulation resource. Therefore, the success of intervention was associated to the use of artificial nipple and no to oral-tactile stimulation.

The impact of the pacifier on the PTNB's life during the hospitalization period and also after discharge has been focus of several discussions about the benefit and malefaction of using the artificial nipple in this kind of stimulation.

By the sample of the publications analyzed, it was possible to observe that many professionals use the pacifier as NNS technique in preterm neonates.

Pimenta *et al.*[12] report that the PTNB of very low weight can be beneficiated by NNS with gloved finger and synthetic nipple, proved by the improvement in sucking process, development in OSS and hospital discharge with breastfeeding allowed. The authors observed shorter time SSB in newborns submitted to pacifier sucking during gastric feeding.

It is important to say that the NNS stimulation with pacifiers should follow specific criteria. The majority of the articles refer to the specific pacifier for preterm of the brand Nuk®, as ideal to stimulation.

Neiva and Leone[17] inferred that thesucking of pacifiers with such specifications may contribute to the lip closure, tongue central groove formation and coordination among SSB, important aspects to early OF diet and hospital discharge.

In a different study Neiva and Leone[18] suggest that the evolution post-birth of the sucking rhythm is mainly attributed to the maturation process, that is, although the benefits highlighted about the sucking stimulation with orthodontic nipple, the improvement occurs due to the corrected gestational age.

In consonance to the studies defending the use of pacifier as an effective oral motor stimulus, Volkmer[19] reinforce the use as stimulus source, in order to maintain the PTNB in alert, what can be associated to a better feeding and greater behavioral organization. Besides, he affirms the NNS stimulation with pacifier do not provoke alteration on breathing patterns, which is essential for these babies, that since very early need to be submitted to oxygen therapy and the use of surfactants.

The pacifier is an instrument much used for NNS stimulation, however, it is preconized the used of gloved finger and cup so the newborn do not make confusion with synthetic and maternal nipples[3]. Studies show that the synthetic nipples sucking is frequently associated to the early weaning[20,21]. Unfortunately, according to Venson *et al.*[22], oral-tactile stimulation has been a technique hardly used.

The technique of the empty breast NNS is an alternative so the PTNB do not make confusion with nipples and the breastfeeding isencourage. At the same time it stimulates the NNS, is safe to the baby that does not coordinate the SSB and stablishes an affective bound between mother and son[23].

It is known that inadequate use of pacifier causes damages on speak development, since it reduces the babbling, sound imitation and words evoke. Castilho and Rocha[24] add that, regarding the stomatognathic system, this NNS modifies the tongue mobility and its rest position in oral cavity, making it difficult the swallowing and also chewing. The tongue anteriorization modifies the intra oral pressure resulting in teeth protusion collaborating to oral breathing in the future The PTNB who use pacifier during stimulation period is predispose to the addiction of this type of NNS and susceptible to the alteration mentioned above through childhood[24].

It is recommended to offer OF to the PTNB when presenting favorable conditions as proper sucking, SSB coordination and proper gastric feeding weaning. The NS in bottle or maternal breast is also an option to feeding and stimulates the PTNB. The natural stimulation in maternal breast is preferred to bottle feeding, since it provides the perioral muscles exercise for proper development of the stomatognathic system, satisfies baby emotionally narrowing the bound between mother and son and anticipates hospital discharge[25].

A study conducted with PTNB suffering from popliteal pterygium syndrome which also causes craniofacial anomalies presented improvement on oral patterns after speech therapy intervention. The transition from gastric feeding to OF was developed with NS in bottle. Results presented mouth opening normalization, adequacy of biting and gag reflexes, increasing in the number of strong sucking and

proper coordination, breathing stability and completely OF diet. Is important to say that in this study, it was developed the NNS stimulation before offering the OF diet, which contributed essentially on results[14].

Delgado[14] suggests when, besides prematurity, the baby carries any pathology that difficult or make impossible the positioning in maternal breast, the techniques can be adapted, regarding the characteristics of every newborn. It is emphasized that breastfeeding should be priority since it is essential for baby in this phase.

In according, Pedras *et al.*[26] emphasize that breast milk is essential for neonates, because it feeds fully, the sucking movements provide craniofacial development, enhancing breathing-chewing-swallowing and speaking functions. Also contributing to affective bound between mother and baby, reduces costs and overall, results on decreasing the infant morbi-mortality index[26].

Concerning the effective breastfeeding, the NS in bottle used in NICU can be applied as favorable technique, when developed properly[23]. According to Medeiros and Bernardi[21], the bottle can be used to verify the presence or absence of sucking, but does not contribute to the OSS maturation in PTNB. Some authors[17,27] believe that the OSS maturation and the early hospital discharge also are results of the GAC advance. Therefore, it is questionable for these authors if the bottle use brings any benefits during the hospitalization period of these babies.

Neiva[28] enounce that using the bottle can put the NB life in risk, since the nipples have bigger flow of milk and can cause chocking. Besides, synthetic nipples contribute to an early weaning and therefore, is directed connected to noxious habits that influence negatively chewing, swallowing, breathing and phoneme articulation[28].

World Health Organization, aiming to promote exclusive breastfeeding and following “ten steps to succeed in breastfeeding” includes the use of cup in this issue.

It is an alternative method for OF inmother’s absence, so the NB does not confuse the bottle and the maternalnipple[26]

In addition, the cup is described as a technique that helps babies there are in transitory phase from gastric feeding to OF in maternal breast and also as a evaluative tool of SSB on PTNBs[11,23].

In an anatomy-physiologic view, the use of cups is not the proper method for NB feeding. Although, according to Almeida and Modes[3], it is an alternative to avoid using bottles and providingmothers confidenceto follow the exclusive breastfeeding.

Another option to avoid synthetic nipples, inside children’s hospital, is NS using finger tube. Calado and Souza[11]quote that this technique can be applied to evaluation of the sucking, swallowing and coordination reflexes among SSB. The study was based on the amount of diet ingested by NB and it was proved enhancing on oral reflexes and NNS patterns, presenting better use of the OF diet.

According to Almeida and Modes[3],the finger tube technique can be indicated to newborns that did not receive the diet in cup, that need longer hospitalization time or presented neurologic complications. For this technique is necessary to use gastric tube (number six) attached to little finger gloved and placed inside a cup of milk. It aims to provide the exercise of orofacial muscles, promoting the sucking pattern maturation[3].

Fujinaga *et al.*[29] reported that the finger tube technique can be applied with the gastric tube connected to a syringe with plunger and attached to little finger gloved. According to authors, this technique should help to fitting the sucking patternof PTNB or on term NB who presented oral disorders. Human milk should always be priority during offering, so the technique becomes closer to natural feeding[29].

**International View**

The techniques more evident in international scope followed, in general, a combination of procedures of oral motor stimulation associated to tactile-kinesthetic stimulation.

Fucile *et al.*[30] developed an experimental study with 75 PTNB, based on speech intervention with stimulation techniques of OSS and body tactile-kinesthetic stimulation. The OSS stimulation consisted in caress cheeks, lips, gums and tongue, while the tactile stimulation was developed by touching head, neck, arms and legs. The results showedthat groups which received both isolated and combined stimulation presented enhancing in SSB coordination and anticipated the transition of tube feeding diet to OF.

Another study was conducted by these authors using the same techniques and the same sample, specifying the NNS using pacifier. This research indicated a positive result of tactile-kinesthetic stimulation on the OSS pattern of the PTNB. Results showed that the isolated practice of the techniques provide positive effects, however, only the combination between them is indeed satisfactory[31].

Boirion *et al.*[32]leda trial with 43 PTNB. The newborns were divided in three groups, one group using oral sensorimotor stimulation, the other stimulation and oral support, and the third group only oral support - considered by authors as control group. For oral support, the therapist with the left hand supported one side of the NB’s cheek toward lip.

With the other hand pushed the other side of the cheek with third finger. While the little finger gave support to mandible under chin, the other fingers supported the bottle. The stimulation was described as cheeks, lips and tongue manipulations, NNS in gloved finger to motivate sucking and swallowing reflexes and NS in bottle. The therapist should make regular pauses, placing the bottle nipple in the corner of the neonate's mouth, this way was observed better SSB control.

It was used the pressured pacifier to collect information about neonate's sucking rhythm. This pacifier was connected to pressure amplifier device, sending information about sucking pattern to a computer,for further analysis. The research concluded that oral stimulation increased salivation and made the swallowing process easier. The study focused on NS techniques in bottle associated to oral support and the results verified that oral support had apositive influence on feeding routine and sucking patterns of the studied population[32].

Hwang *et al.*[33] proposed the effectiveness of transition from tube to OFdiet, under intervention with perioral and intra oral motor stimulation in 90 preterm babies. It was offered the pacifier as NNS stimuli. Both stimulated PTNB and control group did not presented performance statistically significant, but regarding the NNS work, the stimulated group presented greater number of sucking than control group.

The technology also is a great allied of PTNB interventions. Poore*et al*.[34] and Barlow *et al*.[35] developed trials in order to evaluate the effectiveness of NNS with electronic pacifier (pressured) named *NTrainer*® in PTNB.

According to authors, the *NTrainer*® is a biomedical device which develop the function of a NNS synthetic, in which pulsing stimulus are sent to pacifier (as a pulsing nipple) attached to an electronic device. This device promotes sucking stimuli and captures information about rhythm, number of pauses and blurts and sends information for computer analysis.

Poore *et al.*[34]and Barlow *et al.*[35] developed a trial and cohort research, respectively, both with 31 PTNB sample, using *NTrainer*®as oral motor intervention. The results were satisfactory, since the stimulation was associated to the acceleration of the sucking process, the increasing in the number of blurts, to the enhancing of the oral dynamic system and early hospital discharge.

The authors suggest that this type of resource contributed to oral sensorimotor development of the PTNB that presented weak sucking. They described that the resource reflects in the increase of cerebral skills, organization of the oral dynamic system and non-nutritive pattern (skills that is initial to the complexity that involves oral feeding and the success of other skills as chewing and speaking). The fast advent of NNS in children submitted to *NTrainer*®therapyaccelerated the transition to OF diet[34,35]. Similar *NTrainer*®technology was not reported in any national article analyzed.

Four articles[30,33-35] out pf the six international studies analyzed, used the pacifier as resource for the non-nutritive sucking stimulation. Two articles[31,32] used the non-nutritive sucking in gloved finger. None of the studies used non-nutritive sucking in empty breast or nutritive sucking in finger tube.

Boiron *et al.*[32] used bottle in nutritive sucking, but did not use synthetic nipple to non-nutritive sucking.

It was applied the NNS stimulation in little finger gloved in less than half of the international articles analyzed, thatisdisagreeing compare to Brazilian findings, in which there is priority to practice this technique.

## FINAL CONSIDERATIONS

The analyzed sample of national articles attested the non-nutritive sucking technique with the little finger gloved as the most current practice in neonatal intensive care units, followed by the non-nutritive sucking with pacifier. Both techniques presented to be effective in the OSMS maturation process, providing an early the hospital discharge of the preterm newborns.

The sample of international articles showed that the practice of the non-nutritive sucking technique associated to body and oral and non-oral manipulation reflect positively on neonates' development of the oral function. Further, it brings further knowledge about technologies aiming to improve the sucking patterns in preterm newborns.

Breastfeed should be promoted on children hospital environment and the techniques of NNS and NS performed in PTNB may contribute to the success of breastfeed or provoke an early weaning process, when occurs the use of synthetic nipples.

New studies should be developed focusing the impacts of NNS with orthodontic pacifier and NS in bottle during the lactation process. There is a necessity of systematic and scientific data about the benefits or malefaction of these instruments during the period of PTNB hospitalization and after hospital discharge.

**RESUMO**

A prematuridade é um dos fatores mais incidentes no ambiente hospitalar infantil. O trabalho fonoaudiológico realizado em hospitais com foco no recém-nascido prematuro tem conquistado cada vez mais espaço e apresenta como proposta principal a detecção de problemas relacionados à deglutição, proporcionando recurso aos neonatos que fazem uso de via alternativa de alimentação, devido à imaturidade orgânica. O uso de técnicas para maturação do sistema sensório-motor-oral vem sendo explorado a fim de que o recém-nascido pré-termo realize transição, mais segura e em menor tempo, para alimentação plena por via oral. O objetivo deste estudo é realizar revisão sistemática da literatura nacional e internacional a fim de elencar diferentes técnicas e elucidar sobre a eficácia das mesmas, quanto à maturação do sistema sensório-motor-oral em neonatos prematuros que permanecem em ambiente hospitalar. Segundo a literatura, a técnica mais utilizada no Brasil é a sucção não nutritiva com dedo mínimo enluvado ou chupeta ortodôntica. Em outros países, as técnicas mais citadas foram a sucção não nutritiva com chupeta seguida da estimulação do sistema sensório-motor-oral. Tanto as técnicas utilizadas no Brasil quanto no exterior têm refletido positivamente no desenvolvimento das funções orais de neonatos. Levando em conta a necessidade de promoção do aleitamento materno exclusivo, publicações recentes evidenciaram alarmante e preocupante percentual de uso de bicos sintéticos para estimulação em unidades de terapia intensiva neonatal.

**DESCRITORES:** Recém-Nascido; Prematuro; Alimentação; Transtornos da Deglutição; Terapia Intensiva Neonatal; Aleitamento Materno

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Mailing address:
Esther Ferreira Lemes
Rua Brigadeiro Faria Lima 260, Jardim Calegaris
Paulínia - SP – Brasil
CEP: 13140-105
E-mail: estherflemes@gmail.com