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THE USE OF PACIFIERS FOR NON-NUTRITIVE SUCKING IN SOUTH AFRICAN NEONATAL INTENSIVE CARE UNITS: ETHICAL CONSIDERATIONS

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Medicine in Bioethics and Health Law

Johannesburg, May 2015

Declaration

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Abstract

The World Health Organization (WHO) launched the Baby Friendly Hospital Initiative (BFHI) in an attempt to increase breastfeeding rates amongst infants. This initiative is focussed on eliminating hospital practices that could influence breastfeeding success. One such practice is the provision of pacifiers to breastfeeding infants which is highlighted in step 9 of BFHI's 10 steps to successful breastfeeding. Pacifiers are known to potentially cause nipple confusion and a decrease in milk supply. In this report I argue that the use of pacifiers for preterm infants in the Neonatal Intensive Care Units (NICUs) is ethically justified, since the benefits of pacifier use for preterm infants in the NICU outweigh the potential influence on breastfeeding success. The benefits of pacifier use for NNS for preterm infants include self-regulation, pain management and a faster maturation of the suck-swallow-breathe (SSB) coordination. An established SSB coordination is needed for successful oral feeding.

In the NICU, preterm infants face unique challenges. These challenges include separation of the mother-infant dyad, frequent painful stimuli and breastfeeding difficulties that can be attributed to a poor SSB coordination. This paper suggests that pacifiers can be used to mitigate and improve the effects of these challenges.

In this paper I used the principlism framework, consisting of the four bioethical principles namely autonomy, beneficence, non-maleficence and justice to highlight the constitutional conflicts and ethical dilemmas when considering the benefits of pacifier use and its potential influence on breastfeeding. I argue that hospitals with a baby friendly accreditation have ethically justified reasons to provide pacifiers for preterm infants in their NICUs.

Finally, I propose a set of recommendations for ethically justified pacifier use in NICUs.

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List of Abbreviations / Acronyms

NNS	-	Non-Nutritive Sucking
PMA	-	Post Menstrual Age
NICU	-	Neonatal Intensive Care Unit
BFHI	-	Baby Friendly Hospital Initiative
WHO	-	World Health Organization
UNICEF	-	United Nations International Children's Emergency Fund
SIDS	-	Sudden Infant Death Syndrome
AAP	-	American Academy of Pediatrics
KMC	-	Kangaroo Mother Care
SSB	-	Suck Swallow Breathe
HPCSA	-	Health Professions Council of South Africa
EBM	-	Evidence Based Medicine
NHI	-	National Health Insurance

1. Introduction

The Baby Friendly Hospital Initiative (BFHI) was started by the World Health Organization (WHO) in an attempt to increase breastfeeding rates and decrease infant mortality and morbidity for all infants. As part of the initiative 10 steps were formulated to help guide hospitals to ensure that infants have the best possible chance towards successful breastfeeding. The focus of this report will be on step 9 of the 10 steps which state that hospitals with a baby friendly accreditation should 'give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants'.

The BFHI was designed for all areas in the hospital where infants are cared for. This includes the Neonatal Intensive Care Unit (NICU) where preterm[1] and sick infants are cared for. The needs of preterm infants differ dramatically from healthy full term infants, and the challenges they face in NICUs are vastly different. The BFHI does not address these differences in their 10 steps; however they do recognise that the NICU environment would benefit from an expansion of their original 10 steps due to the unique challenges preterm infants face in the NICUs.

Since preterm infants are born too early, they are deprived of certain stimulation opportunities that their full term counterparts were exposed to in the womb. One of these is the opportunity for Non-nutritive sucking (NNS). NNS is a term that is used to describe any form of sucking that is not for nutritional purposes, for instance sucking on an emptied breast, baby's own hand, mother's finger or a pacifier. Pacifiers are the preferred method of giving preterm infant NNS opportunities while they are still in the NICU. The benefits of NNS for all infants include self-regulation,

[1] Preterm infants are infants born before 37 weeks gestation (Lubbe 2008, p. 26)

decreasing the risk of sudden infant death syndrome (SIDS), pain management and aiding in the development of the suck swallow breath (SSB[2]) synchrony. These benefits are discussed in detail in Chapter 2. Step 9 of the WHO's 10 steps to successful breastfeeding does not allow the use of pacifiers in hospitals, as pacifiers can potentially influence breastfeeding due to either nipple confusion or a decrease in breast milk production. This will also be discussed in Chapter 2. The BFHI was developed based on healthy full term infants; however, preterm infants that are admitted to a hospital with a BFHI are submitted under the same steps. In this report I argue that preterm infants are unique and have unique challenges when comparing them to full term infants. The unique challenges of the NICU are discussed in Chapter 3. Even though the benefits of NNS are well documented, hospitals that have a BFHI accreditation are not allowed to give pacifiers to their preterm infants. Should they do this, they risk losing their BFHI accreditation. This creates an institutional and ethical conflict between the BFHI accreditation and the benefit of pacifier use for preterm infants which will be discussed in Chapter 4.

In this project I will make use of the principlism framework that was made popular by Beauchamp & Childress to highlight and contextualise the ethical dilemmas faced in NICUs. The four principles that will be discussed in Chapter 5 are autonomy, beneficence, non-maleficence and justice. In discussing these four principles, I will show that the benefit of using pacifiers in the NICU outweighs the potential harm and influence it could have on breastfeeding and that the use of pacifiers for NNS is ethically justified and should be promoted in NICU contexts. I finish this project in Chapter 6 with a set of recommendations for the safe use of pacifiers in the NICU.

[2]Suck Swallow Breathe (SSB) is a rhythmic and coordinated sequence of sucking, swallowing and breathing that needs to be mastered in order for any infant to have successful oral feedings. When this sequence is uncoordinated feeding problems are likely to occur (Goldfield et al. 2006).

These recommendations include how pacifiers should be used, appropriate pacifiers to be used, as well as when to cease the use of a pacifier. These recommendations are proposed in order to minimise the potential influence pacifier use could have on breastfeeding.

2. Non-nutritive Sucking

2.1 Introduction

In this chapter, I will make a distinction between the two different types of sucking, namely nutritive and non-nutritive sucking (NNS). This will be done in Section 2.2 by defining the two terms and providing examples of each. The development of NNS in utero will be discussed in Section 2.3 in order for me to point out the effect that NNS has on the oral feeding[3] development of infants, as well as the influence that a lack of NNS opportunities in the NICU can potentially have on the preterm infant's feeding. In Section 2.4, which deals with the history of using a pacifier as a method of NNS, I will start to contextualise the development of the ethical issues surrounding pacifiers use. The section on the benefits of NNS for both full term and preterm infants (Section 2.5) will highlight the importance of NNS for all infants, while the potential harm that the use of a pacifier can have on breastfeeding (as discussed in Section 2.6) will help the reader fully understand the ethical issues surrounding pacifier use for both full term and preterm infants.

2.2 Definition

An infant has two very distinctive ways of sucking, namely nutritive sucking and non-nutritive sucking (NNS). Nutritive sucking differs from NNS sucking based on the purpose of the sucking, as well as the specific pattern or way of sucking. (Lundqvist & Hafström 1999). During nutritive sucking the infant sucks either on the breast or a bottle to get nutrition (either breast milk or formula) for the purpose of satiety (Harding, Law & Pring 2006). Non-nutritive Sucking (NNS) on the other hand is a term used to describe any form of sucking that is not for nutritional purposes (Pinelli,

[3] Oral feeding generally refers to breast and or bottle feeding

Symington & Ciliska 2002, Jenik & Vain 2009, Liaw et al. 2010). Nutritive sucking is normally very slow and rhythmic with one SSB sequence per second. NNS on the other hand can be rapid bursts of sucks before a period of rest while a breath is taken (Lundqvist & Hafström 1999). From time to time NNS can even follow no rhythm at all. It is this difference in sucking technique that usually contributes to nipple confusion which will be discussed in detail in Section 2.6. NNS can be on the infant's own hand or fingers, an expressed breast, or mother's finger; however pacifiers are more generally used for NNS. Pinelli, Symington & Calista (2002) defines NNS as 'the use of a pacifier with or without water or sucrose'.

2.3 Development of NNS

NNS behaviour or sucking responses can be observed in utero from as early as thirteen weeks Post Menstrual Age (PMA) (Popescu et al. 2008, Hafström & Kjellmer 2000, Lubbe 2008, p. 135), while early components thereof, such as sensitivity around the mouth, have been noted to occur from 'seven or eight weeks post-conceptual age' (Lubbe 2008, p. 135). Even though the sucking behaviour may be present from the end of the first trimester, the sucking reflex will only emerge from about 18 weeks gestation. It is important to note in terms of the premature birth of an infant that sucking behaviour can be present from a very young gestational age, but will remain uncoordinated and non-nutritive in nature (Lubbe 2008, p. 135). NNS will only become established and consistent from about 30 weeks gestation (Hack, Estabrook, & Robertson 1985). In utero, the unborn infant will continually suck on her[4] hands, fingers and lips. She will not only suck on her limbs to master self-soothing techniques, but this emergent sucking behaviour will help her develop

[4] For the sake of simplicity, all infants will be referred to in the feminine.

coordinated sucking that will be needed for successful oral feeding. The sucking and swallowing reflexes becomes coordinated from 32 – 34 weeks gestation, although coordination of sucking, swallowing and breathing will only happen around 36 – 37 weeks gestation (Pickler et al. 2006, Lubbe 2008, p. 140). Some authors believe that infants that receive appropriate intervention in the NICU (like Kangaroo Mother Care (KMC)[5] and breast milk), could start mastering the SSB coordination from as early as 28 weeks (Pinelli & Symington 2009, Pinelli, Symington & Calista 2002). The complete maturation of the SSB coordination will only take place after 36 weeks and in some infants this coordination will only reach full maturity after birth, depending on their individual level of maturity and intervention received in the NICU (Pickler et al. 2006, Pinelli & Symington 2009, Pinelli, Symington & Calista 2002).

The development of the sucking process is important to understand in the context of a preterm infant. The reason for this being that infants born early will not have the same sucking opportunities that are needed to develop their SSB coordination than their full term counterparts would have experienced in the womb. This will be further discussed in Chapter 3.

2.4 History of pacifier use for NNS

Pacifiers are the preferred method of providing an infant with NNS opportunities (Pinelli, Symington & Calista (2002). This method of NNS was first mentioned in the medical literature in 1473 by Metlinger and in 1513 by Rosslin (Castilho & Rocha 2009, Levin 1999), however it was not the modern type of pacifier that is used today. The known history of pacifiers started in the 2nd century where ancient texts make

[5] Kangaroo Mother Care (KMC) or Skin to Skin Care involves placing the infant (dressed only in a diaper) on the mother's bare chest. This ensures skin to skin contact between the mother and the infant. This method of care has numerous benefits for both the mother and the infant. One of the benefits of doing KMC is improved breastfeeding outcomes (Bergh et al. 2012)

mention of sugary objects or honey that were used to calm down newborns (Magner 2005 & Fildes 1986 cited in Castilho & Rocha 2009). In 1506, Albert Drürer portrayed an ancient pacifier in his painting called *Madonna with the Sisken* (also known as *Madonna and Child*). This is the first illustration of an ancient pacifier (Levin 1999, Castilho & Rocha 2009). Pacifiers were any pacifying objects, from clay shaped animals with an opening for honey to sweetened bread covered with fabric for an infant to suck on. These fabric pacifiers were at times dipped in alcohol or opioids to alleviate pain or help infants sleep better (Castilho & Rocha 2009).

The pacifier developed and changed quite a lot over the centuries to the modern pacifier we currently have available. Interestingly enough, before the industrial era (pre 1750), sucking on the breast for nutrition and comfort was regarded as completely fulfilling infants' nutritional and emotional needs. With the start of the industrial era, NNS on pacifiers increased and breastfeeding decreased, as many believed the breast was not fulfilling all the emotional needs of infants (Castilho & Rocha 1999). Since then many research studies have been dedicated to the effect that pacifier use has on breastfeeding (Kronberg & Væth 2009, Haung et al. 2011). From the 1970's, with the promotion of maternal breastfeeding (as opposed to formula feeding or the use of a wet-nurse[6]), pacifier use has been contra-indicated. This change in the medical fraternity's opinion on the use of pacifiers is as a result of various studies done on the negative effects that pacifier use has on successful breastfeeding[7].

[6] A wet-nurse is another lactating human female that would nurse the infant, normally at night (or other times) when the mother herself could not breastfeed (Thorley 2008).

[7] Some authors consider feeding of breast milk from a bottle as breastfeeding as well (Noel-Weiss, Boersma & Kujawa-Myles 2012, WHO 2002), For the sake of clarity, I refer to breastfeeding only as direct feeding of breast milk from the breast of the mother.

In the next section, I will discuss the benefits of NNS that is applicable for both full term and preterm infants. I do this in order to start my claim for the use of pacifiers within the NICU. The specific benefit of pacifiers for preterm infants and the need thereof in the NICU will be elaborated on in Chapter 3. The negative effects that pacifier use can have on successful breastfeeding will be discussed in Section 2.6.

2.5 Benefits of NNS

The benefits of NNS are well documented in the literature. Four benefits of NNS that have consistently been shown in various studies are:

Self-regulation

Any form of sucking is self-regulatory or –calming for infants (Harding, Law & Pring 2006, Jenik & Vain 2009). As mentioned in Section 2.3, a fetus is used to sucking on her hands, fingers and lips in utero and she will use these NNS skills to help calm herself after she is born. Full term infants can easily bring their hands to their midline (middle of their body / face) in order to suck on their own fingers or thumbs, but a preterm infant usually lacks the strength to do this and will need aid to use their own limbs for NNS behaviour. Sucking on a pacifier will have the same calming effect for both full term and preterm infants.

Decrease in the incidence of sudden infant death syndrome

Pacifier use has been linked to the decrease in the incidence of sudden infant death syndrome (SIDS) (Adair 2003, Jenik & Vain 2009, Ponti 2003). The reason for this decrease in the incidence of SIDS varies according to different authors (Callaghan et al. 2005). L'Hoir et al. (1999) suggested that the placement of a pacifier in an infant's

mouth could prevent her from turning over on her face, which in turn will prevent an obstruction of the infant's nose and mouth. Mitchell et al. (1993) on the other hand, stated that sucking on a pacifier will increase the muscle tension of the upper airway and ensure that the tongue's position is more anterior in the mouth and thus leads to a protected airway. Arnestad, Andersen & Rognum (1997) pointed out that that infants who suck on a pacifier during bed time, require less stimulation to wake them and thus rarely enter into a deep sleep which lessens the risk of sleep apnoea[8]. This also seems to be the general consensus in the literature on why pacifier use is linked to a reduction in the incidence of SIDS.

Pain management

NNS can be used to provide minor pain relieve during an uncomfortable or minor painful procedure (America Academy of Pediatrics (AAP) 2004). However, when a sweet substance like breast milk or sucrose is used in conjunction with the NNS, it has a stronger analgesic effect (Liaw et al. 2010, Soxman 2007, Jenik & Vain 2009) and will alleviate pain during more invasive and painful procedures like heel pricks and immunisations.

Support for SSB development

A coordinated SSB sequence is needed for successful oral feeding (Harding, Law & Pring 2006). As I highlighted in Section 2.3, a fetus has exposure to NNS opportunities in utero which aids in the development of a coordinated SSB sequence. This benefit of NNS becomes more prevalent when opportunities for NNS are taken away from an infant (as is the case with infants that are born prematurely).

[8]Sleep apnoea is a sleep disorder characterised by pauses in breathing normally lasting more than a few seconds (National Institute of Health 2012)

Infants that are born early do not have all the NNS opportunities that their full term counterparts would have had in utero, and normally struggle with SSB coordination. Oral feeding is one of their major challenges in the NICU due to the lack of exposure to NNS opportunities. This, together with the unique challenges and particular benefits of NNS for the preterm infant, will further be discussed in Chapter 3.

The use of pacifiers for NNS (especially for full term infants) has always been a controversial issue in the medical literature, irrespective of the noted benefits of NNS. Most health care professionals will not recommend the use of a pacifier for NNS (Ponti 2003), as the benefits of pacifier use are thought to be overshadowed by the negative effect it has on breastfeeding and breast milk production. The potential harm that pacifier use could have on breastfeeding will be discussed in the next chapter.

2.6 Potential harm of pacifier use

Pacifier use is linked to some of the fundamental breastfeeding issues like incorrect latching and low milk supply. Both of these could eventually lead to a reduced motivation to breastfeed and early weaning from breastfeeding (Kair, Jaffe & Phillipi 2013). Early pacifier and artificial teat introduction will also lead to a less than optimal chance of exclusive breastfeeding[9] at 1 month and any breastfeeding at 6 months of age (Victora et al. 1997, Howard et al. 2013). Howard et al. (2013) also found that early introduction of artificial teats, as opposed to later introduction, also has an influence on breastfeeding success. Various reasons exist why pacifier use

[9] Exclusive breastfeeding refers to only feeding an infant breast milk. No other liquid or solid from any other source is fed to the infant (Labbok 2000).

influences breastfeeding success rates. Some of the reasons are nipple confusion and a decrease in milk production.

Nipple confusion

In Section 2.2, I discussed the difference between nutritive and non-nutritive sucking. An infant would give a slow and rhythmic suck on the breast or bottle when feeding and bursts of sucks before resting when sucking on a pacifier for non-nutritional purposes. This difference in the sucking technique and pattern can cause an infant confusion when moving from a pacifier to the breast, and subsequently cause an infant to refuse the breast completely. The possibility of nipple confusion increases if infants are exposed to sucking on a pacifier in the first 6 weeks of life, or before breastfeeding is properly established (Castilho & Rocha 1999). The same nipple confusion could set in if a breastfed infant is exposed to the nipple of a bottle (Hargreaves & Harris 2009).

Decrease in milk production

After the first 3-8 days postpartum[10], milk production work on a supply and demand principle. The more milk that is removed from the breast (by the baby sucking on the breast), the more milk will be produced by the breast. This is called Lactogenesis III (Lubbe 2008, p. 165). Mothers who choose to put a pacifier in a baby's mouth when she cries, as opposed to offering her the breast for comfort (or nutrition), are stimulating their breasts less, and are more prone to have a low milk supply (Castilho & Rocha 1999). This normally leads to the introduction of formula feeds, which again leads to less time on the breast and a further decrease in milk production (Castilho &

[10] Postpartum refers to the period after birth

Rocha 1999). This cycle of low milk production will eventually lead to early weaning of breastfeeding (Stuebe et al. 2014).

The WHO recommends exclusive breastfeeding ‘up to 6 months of age, with continued breastfeeding along with appropriate complementary foods up to two years of age or beyond’ (WHO 2015, para. 3). It is based on this recommendation, and the possible influence that the use of pacifiers can have on breastfeeding success and duration, that they addressed the use of pacifiers in their 10 steps to successful breastfeeding. The BFHI and the 10 steps to successful breastfeeding will be discussed in Chapter 4.

2.7 Conclusion

NNS can be observed in utero and plays an important part in the development of a coordinated SSB sequence which is needed for successful oral feeding. Sucking on a pacifier has been used since the 15th century as a method of NNS. NNS and sucking on a pacifier have been known to calm an infant, reduce the incidence of SIDS and are successful in pain management. The role it plays in the development of a coordinated SSB sequence is of particular interest for infants that are born too early, since they are deprived of NNS opportunities that they otherwise would have had in utero. Even with the benefits considered, the WHO does not advocate the use of pacifiers while an infant is breastfed, since it could cause nipple confusion and potentially have an impact on breast milk production and breastfeeding success. The benefits of NNS and pacifier use for NNS, as well as the potential harm of pacifier use, are applicable to both full term and preterm infants. Preterm infants that are admitted to the NICU experience unique challenges that NNS could potentially help overcome. These will be discussed in the next chapter.

3. Neonatal Intensive Care Units

3.1 Introduction

In this chapter, I will discuss the NICU. In Section 3.2 I will identify the challenges that mothers and preterm infants face in the NICU to highlight the differences between the healthy full term newborns and fragile, sick preterm infants in the NICUs. I do this to point to the need for different rules to apply to these two groups of infants. Section 3.3 will focus on the benefits of NNS for the preterm infant in the NICU as well as show how the use of a pacifier can be used to overcome some of the challenges that the preterm infant faces. My aim with this chapter is to support my thesis that pacifier use in the NICU should be seen as justifiable.

3.2 Challenges within the NICU

Development in health care technology over the last few decades has led to an increase in the survival rates of preterm infants (Allen et al. 2000, Alexander & Slay 2002, Lubbe 2009). This however means that more preterm infants that were supposed to complete their growth within the protective boundaries of the uterus now have to complete their development in the harsh NICU environment (Yildiz & Arikan 2011). During a preterm infants stay in the NICU she will face many challenges that full term newborns do not have to face. Some of these challenges are linked to the NICU environment and exposure to inappropriate (too little, too much or incorrect) stimuli. These challenges can include separation of the mother-infant dyad, lack of emotional support for the mothers, exposure to frequent painful stimuli and breastfeeding difficulties. The challenges will be discussed individually and I will highlight the difference between the healthy full term infant and the vulnerable preterm infant.

Separation of the mother-infant dyad

When a preterm infant is admitted to the NICU, she is usually separated from her mother (and father). This can sometimes be for long periods of time, depending on the infant's condition and the family's circumstances (Nordic & Quebec working group 2011, Ladomenou, Kafatos & Galanakis 2007). Separation of the preterm infant from her mother can lead to an increased level of cortisol in her body. Cortisol is a stress hormone that is released when an infant feels unsafe or overstimulated (Bergman 2010, p. 88). Overstimulation can occur when an infant receives inappropriate stimulation. This can include harsh lighting, obnoxious smells, loud sounds, inappropriate handling, lack of NNS and incorrect positioning (Lubbe 2009). All of these can impact on the infant's NICU stay, but might also have a lasting effect on the infant's general development. Research has found that when a mother is close to her infant, she will experience less stress in the NICU (Bergman 2010, p. 87).

In South African NICUs, both in the public and private sector, there is little, if any, space for the mothers in the units. Rooming-in facilities, that are available the general maternity wards of South Africa, are not available in any of our NICUs. References to support my statement is not available, however this is general knowledge within the NICU environment in South Africa. The units in South Africa are open multi-bed units with minimal space. Some units provide a chair for the mothers to sit next to the incubator, but this is institution specific and not seen as a necessity due to the lack of space. As mentioned in Section 2.3 KMC is linked to an increase in breastfeeding success rates. Although KMC (whether continuous or 24 hours per day or intermittent) is encouraged in most of the NICUs in South Africa,

the lack of comfortable chairs and beds next to the infants incubator, means that this form of care intervention is not always realistic in South Africa.

Frequent painful stimuli

Preterm infants in the NICU are often sick and need specialised care and intervention. They are exposed to frequent painful interventions such as heel pricks, suctioning and insertion of drips (Carbajal et al. 2002, Carbajal et al. 2008, Stevens et al. 2011). Full term infants have their mothers with them to console them after a painful intervention, but these vulnerable infants are mostly separated from their mothers and have to cope with the pain on their own (Nordic & Quebec working group 2011).

Breastfeeding difficulties

Most infants admitted to the NICU are not able to exclusively breastfeed successfully due to either immaturity and / or illness (Maastrup et al. 2014a, Nyqvist & Kylberg 2008). As mentioned in Section 2.3, NNS can be observed in utero from as early as thirteen weeks gestation (Popescu et al. 2008). It is however only more established with a consistent pattern at about 30 weeks gestation (Hack, Estabrook, & Robertson 1985). Infants that are born too early will not (without intervention) receive the type of NNS opportunities needed to help them develop their SSB synchrony. The SSB synchrony allows for infants to protect their airway while sucking and swallowing. If the synchrony is not established, oral feeding might be unsafe for infant, and could lead to aspiration (Lau, Smith & Schanler 2006).

The coordination of this SSB pattern is needed to successfully breastfeed and incoordination thereof is one of the main reasons why many infants are kept in the

NICU. Infants that have to complete their development outside the protective womb environment often have neurological and developmental problems. One such a difficulty is oral feeding (Lubbe 2009). One of the most common neurological problems with which these infants struggle is feeding. This is mainly due to the immature SSB coordination that can be attributed to the lack of NNS opportunities that their full term counterparts would have had exposure to in utero (Pickler et al. 2006). While preterm infants struggle with oral feeding, a tube is placed through the mouth or nose that delivers food (milk) directly into the infant's stomach. This is called gavage feeding. Long-term gavage feeding without stimulating the sucking reflex could lead to a slower transition to oral feeding and longer hospital stay (Pinelli & Symminton 2009).

As mentioned in Section 2.3, the sucking reflex is continually stimulated in utero while the infant sucks on her hands, limbs or fingers. When an infant is born prematurely, these sucking opportunities need to be provided to them. Providing a preterm infant with NNS opportunities (such as on a pacifier) is a way of stimulating the sucking reflex after birth. In Section 2.5 the benefits of pacifiers use for both full term and preterm infants were discussed. In the next section I will elaborate more on the benefits thereof especially when considering the challenges that preterm infants face in the NICU. I do this to support my motivation for pacifier use in the NICU, and that pacifier use in the NICU should be seen as ethically justifiable.

3.3 Benefits of NNS and pacifier use in the NICU

In this section the benefits of NNS and specifically pacifier use in the NICU will be discussed as a way of overcoming some of the aforementioned challenges faced in the NICU. I do this in order to motivate my thesis that pacifiers should be used for

NNS in the NICUs in South Africa. As mentioned in Section 2.5, NNS are beneficial for both preterm and full term infants. These benefits include self-regulation, decrease in the incidence of SIDS, pain management and support for SSB development.

Any form of sucking is calming for infants. When a preterm infant is born, they usually lack the muscle strength to bring their hands to their midline in order to suck on their own hands / limbs or fingers. Pacifiers are then used to provide the preterm infant with these sucking opportunities. The calming effect of sucking on a pacifier will also have benefits for the preterm infant's physiological stability, as research has shown that NNS has a positive effect on oxygen saturation (Pinelli & Symminton 2009, Pickler et al. 1996). The benefit of self-regulation for the preterm infant can also be used to overcome the challenge of separation of the mother-infant dyad. When an infant is separated from her mother for long periods of time, stress hormones like cortisol will be released. This can lead to physiological instability (Bergman 2010, p. 88). Providing an infant with a pacifier to suck on during times of mother-infant separation could help overcome the physiological instability as well as minimise the infant's experience of stress in the NICU (Pinelli & Symminton 2009, Pickler et al. 1996).

An additional challenge that preterm infants in the NICU have to face is the numerous painful interventions they receive on a daily basis. NNS have been shown to reduce the preterm infant's experience of pain (see Section 2.5). When coupled with a sweet substance like sucrose or breast milk the effect on the experience of pain is even more beneficial for the preterm infant. Preterm infants should thus be

provided with a pacifier (and a sweet substance like sucrose / breast milk) in order to minimise their experience of pain during a painful intervention.

The main benefit of NNS in the NICU is that it supports the development of the coordination of the SSB sequence. This will directly impact the transition from tube to oral feeding and thus lead to a decrease of breastfeeding difficulties. NNS has been connected to the maturation of the neural system that is responsible for ororhythmic activity skills (which includes oral feeding amongst other things) (Barlow and Finan 2005). It also encourages sucking behavior and matures the SSB coordination (Pinelli & Symington 2009), and has been linked to better growth and maturation of preterm infants (Pinelli & Symminton 2009, Pickler et al. 1996). As mentioned in Section 2.5, a coordination of the SSB sequence is needed in order for an infant to safely and successfully feed orally. A Cochrane review by Pinelli & Symmington (2009) also found that preterm infants that used pacifiers for NNS were discharged from the hospital sooner. This could possibly be due to the fact that successful oral feeding is widely used as a milestone for discharge of preterm infants from the hospital (Nyqvist et al. 1999, Yildiz & Arikan 2011), and as mentioned earlier, NNS does accelerate the transition from tube to oral feeds. I thus conclude that NNS and pacifier use is beneficial for preterm infants in the NICU.

In South Africa, all private sector hospitals allow pacifiers for the purpose of NNS into their NICUs. Problematically, however, public sector hospitals commonly refuse to allow pacifiers into units in order to comply with the WHO's Baby Friendly Hospital Initiative (BFHI) which discourages the use of pacifiers due to the potential influence it could have on breastfeeding success rates. As I point out later, in Chapter 5, this institutional conflict raises ethical problems.

3.4 Conclusion

The NICU environment differs dramatically from the protective environment of the womb. This results in preterm infants experiencing unique challenges that healthy full term infants do not have to experience. The important challenges are the lack of space in South African NICUs that result in separation of the mother and infant, the frequent painful interventions that these infants have to undergo on a daily basis and breastfeeding difficulties preterm infants experience. NNS and pacifier use in the NICU can assist in mitigating some of these challenges. The benefits of NNS that are of particular interest in the NICU, are the calming effect of sucking and the positive impact it has on an infant's experience of pain. The most important benefit of NNS and pacifier use in the NICU is the assistance it provides in the maturation and coordination of the SSB sequence and the role it plays in accelerating the transition from tube to oral feeding.

In this chapter I established that NNS and pacifier use have a definite role to play in the NICU, however the potential influence it could have on breastfeeding cannot be ignored. It is based on this influence that the WHO launched the BFHI. This initiative will be discussed in the next chapter.

4. Baby Friendly Hospital Initiative

4.1 Introduction

The WHO recognises that breast milk is the ideal nutrition for all infants and has launched the Baby Friendly Hospital Initiative as a measure to improve breastfeeding success rates across the globe. In Section 4.2 of this chapter I will look at the history of the BFHI and give an outline of the 10 steps to successful breastfeeding. The impact of the BFHI on the NICU will be discussed in Section 4.3. This will contextualise the ethical dilemmas that arise when attempting to balance the benefits of NNS (as discussed in Section 2.5) with the benefits of breastfeeding. The impact of the BFHI on the NICU will be done by making reference to step 9 of the 10 steps to successful breastfeeding which does not allow the use of pacifiers for breastfeeding infants.

4.2 History of the BFHI

Breast milk is the ideal nutrition for all infants (AAP 1997). During the early 1970's, the 27th World Health Assembly started noticing an overall drop in breastfeeding rates across the globe (WHO 2009b). The drop in breastfeeding rates coincided with an increase in morbidity and mortality rates amongst children. This decline in breastfeeding rates led to the Innocenti Declaration that was signed in 1990. The Declaration recommended that national breastfeeding policies should be developed and implemented by all governments in order to protect, promote and support breastfeeding (Alliance of African Midwives 2012).

Following the Innocenti Declaration, United Nations International Children's Emergency Fund (UNICEF) and the WHO launched its Baby Friendly Hospital

Initiative in 1991 in an attempt to increase the number of infants that are breastfed (Levin 1999, Alliance of African Midwives 2012). The main objective of the BFHI was to protect and promote breastfeeding as a normal and natural practice to nurture infants, provide them with the best opportunity to successful breastfeeding and optimise their chances to breastfeed exclusively for the first six months and to continue breastfeeding with appropriate complementary foods for two years and beyond (KwaZulu-Natal Department of Health 2001, WHO 2009b.

The BFHI was launched in South Africa in 1993 (KwaZulu-Natal Department of Health 2001). Statistics on how many hospitals in South Africa have a baby friendly Hospital accreditation is not freely available. It is, however, common knowledge amongst health professionals that more public health facilities have a baby friendly hospital status than private health care facilities.

The BFHI is based on 10 steps that will help hospitals create environments where breastfeeding is promoted and mothers who breastfeed are better supported (Taylor et al. 2011).

The BFHI states that every facility providing maternity services and care for newborn infants should (WHO 2009a):

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within a half-hour of birth.

5. Show mothers how to breastfeed and how to maintain lactation, even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk unless medically indicated.
7. Practice rooming-in - allow mothers and infants to remain together - 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

In order to receive the accreditation as a Baby Friendly Hospital, the whole hospital (including the NICUs) has to qualify on all 10 of the steps. Studies have shown that compliance with the 10 steps leads to an increase in breastfeeding initiation, duration and exclusivity (Kramer et al. 2001, Merewood et al. 2003, Hofvander 2005, Abrahams & Labbok 2009). The BFHI and the associated 10 steps to successful breastfeeding are targeted at healthy full term infants, and special populations like preterm infants in the NICU are not considered as unique during the accreditation process (WHO 2009). This creates ethical issues that need to be considered. The ethical considerations will be discussed in Chapter 5.

Even though the BFHI is targeted at healthy full term infants, implementation thereof also have a positive effect and direct impact on breastfeeding success rates in NICUs (Nyqvist & Kylberg, 2008). Various studies have shown that as a result of the BFHI program, breastfeeding rates increased both within the NICU as well as after

discharge (Merewood et al. 2003, Oddy & Glen 2003, Bicalho-Mancini & Velàsquez-Meléndez 2004).

As mentioned earlier in this section, breast milk is the ideal nutrition for all infants. The special anti-infective properties of breast milk are considered even more beneficial to preterm infants in the NICU (Merewood et al. 2003, Maastrup et al. 2014b). In a literature review by Callen & Pinelli (2005, p. 73), they concluded that breast milk provides 'nutritional, gastrointestinal, immunological, developmental and psychological benefits that may impact (preterm infant's) long-term health and development. Human milk is advocated as the best source of nutrition for preterm infants because it provides substances not supplied in formula.'

It is for this reason that breastfeeding practices and especially breast milk feeding should be preserved at all cost in the NICU. The challenge, however, is to find the balance between providing a preterm infant with the best possible chance of a successful breastfeeding journey, while still providing them with the benefits of NNS. The ethical implications and considerations of balancing the benefits of breastfeeding and the possible impact of pacifier use on breastfeeding the preterm infant will be discussed in Chapter 5. In the next section I will look at the implementation of the BFHI in the NICU.

4.3 BFHI and the NICU

In Section 3.2 I highlighted the unique challenges that hospitalised preterm infants face when comparing them to healthy full term newborns. The BFHI is quite clear that it does not make special consideration for preterm infants in the NICU, however they have noted in their 'Baby-Friendly Hospital Initiative, Revised, Updated and

Expanded for Integrated Care' document (2009a) that certain areas would benefit from a revision or expansion of the original 10 steps. . One such area that they point out is neonatal care and NICUs, however, they are not specific on which aspects of NICU care require attention and no official guidance has been provided.

In the absence of an official WHO document, several countries have developed an amended version of the 10 steps to take special contexts like the NICUs into consideration. These countries formed a working group (The Nordic & Quebec working group) that meets twice a year to discuss the BFHI in the NICU. They continue to work on a document about implementing BFHI into the NICUs (Nordic & Quebec working group 2011, Nyqvist et al. 2013).

This working group came up with an expanded set of steps that makes special considerations for NICUs. In terms of the use of pacifiers for NNS, Step 9 of the original BFHI steps says that hospitals including NICUs should 'give no artificial teats of dummies to breastfeeding infants'. The working group expanded step 9 to the following: 'Use alternatives to bottle-feeding at least until breastfeeding is well established and only use pacifiers and nipple shields for justifiable reasons' (Nyqvist et al. 2013).

A shortcoming of this modification is that 'justifiable reasons' are not well defined and the term is open to interpretation by the health care professional. It is not clear from this amended guidance whether the use of pacifiers for NNS in NICUs discussed in Chapter 3 would constitute ethically justifiable reasons. In the next chapter, I will show that the use of pacifiers in the NICU is ethically justifiable.

4.4 Conclusion

The BFHI was launched by the WHO in 1991 in an attempt to improve breastfeeding success rates globally. The BFHI consists of 10 steps that a health care institution needs to adhere to in order to receive a Baby Friendly Hospital accreditation. South African hospitals do not make consideration for special populations such as preterm infants that are hospitalised in NICUs. This means that the whole hospital, including the NICU have to adhere to all 10 steps of the BFHI. The WHO does, however, recognise that certain areas within a hospital (like the NICU) would benefit from revisions to the original BFHI document. A working group for implementing the BFHI into NICUs came up with revised steps to the BFHI. The revised steps consider certain aspects that make preterm infants in the NICU a unique population. One aspect that they have considered is the benefits of NNS for the preterm infant, and their recommendation is to allow the use of pacifiers for justifiable reasons in the NICU. A shortcoming of this recommendation is that justifiable reasons are not defined. In the next chapter, I will look at the ethical considerations and show that the use of pacifiers in the NICU is ethically justifiable.

5. Ethical considerations

5.1 Introduction

Ethics has always been a fundamental part of health care and health care policy planning. In this chapter I will explore the ethical issues that arise when considering the pacifier use for preterm infants debate. The main ethical issue, the refusal of a baby friendly accredited hospital to allow pacifiers in their NICUs, will be highlighted in Section 5.2. In Section 5.3 I will discuss this dilemma using the principlism framework. The principlism framework consists of four bioethical principles, namely autonomy, beneficence, non-maleficence and justice. I will use these principles to argue that the use of pacifiers for NNS is ethically justifiable in all NICUs.

5.2 Ethical Issue

The BFHI was designed with the best interest of the infant in mind and wants to promote and protect breastfeeding practices for all infants. Although it is targeted at healthy full term infants, we cannot ignore the influence it has on preterm and sick infants in the NICUs. The preterm infant face different challenges compared to healthy full term infants. Some of these challenges that were discussed in Section 3.2 include separation of the mother-infant dyad, frequent painful interventions and breastfeeding difficulties. In Section 3.3 I looked at the benefits of pacifier for NNS use in the NICU and argued that pacifiers can be used to mitigate the effects of some of these challenges. In South Africa, the ethical issues at hand come into play when a hospital has a baby friendly hospital accreditation. According to step 9 of the 10 steps to successful breastfeeding, a baby friendly hospital is not allowed to use pacifiers in their NICUs. This results in preterm infants not able to gain from the benefits of pacifier use at a baby friendly accredited hospital, since the hospital does

not want to lose its baby friendly hospital status. In the next section I will argue that pacifier use is in the best interest of the preterm infant and should be allowed in all NICUs in South Africa. I will discuss each principle individually, and highlight the relevant ethical issues under each subsection.

5.3 Principlism Framework

The Principlism Framework, also known as 'the four principles', is widely used as a model in healthcare decision making and is well researched amongst the philosophical community (Dhai & McQuoid-Mason 2011, Hine 2011). The notion of using principles to help guide decision making in healthcare has been around for many centuries. Hippocrates, a physician-philosopher and father of the modern day Hippocratic Oath asked doctors to 'help and do not harm' (McCormick 2013, para. 1). The current day Principlism Framework was described and made popular by Tom Beauchamp & James Childress in 1979 in their book *Principles of Biomedical Ethics* (McCormick 2013). This model consists of four principles that health care professionals should weigh against each other when they face ethical dilemmas. According to Hine 2011, principlism should not only be seen as a bioethical model of morally right action, but also as a model of justification of acts. In this chapter, I will apply principlism as a model to justify the use of pacifiers in the NICU.

The bioethical principles are by no means an easy way to find solutions to ethical dilemmas, but the principles need to be upheld against each other in order reach a decision regarding care and treatment of the preterm infant. The principles that are described by Beauchamp and Childress are autonomy, beneficence, non-maleficence, and justice. I will give a definition and introduction to each principle before applying the principles to the pacifier use for NNS debate.

5.3.1 Autonomy

Autonomy refers to the patient's right to make informed decisions based on their individual beliefs about what is best for them. It is often referred to a patient's right to autonomous choices (Molyneux 2009, Dhai & McQuoid-Mason 2011). The Health Professions Council of South Africa (HPCSA) defines autonomy as the patient's right 'to selfdetermination (sic) or to make their own informed choices, and to live their lives by their own beliefs, values and preferences' (HPCSA Booklet 1 2008, p. 2). It is generally seen as the basis of informed consent - an important aspect in the professional / patient relationship (McCormick 2013). The National Health Act also stipulates that 'a health service may not be provided without the user's informed consent' (National Health Act No. 61 of 2003, s. 7). For a patient to act autonomously within healthcare, the assumption is that the patient is a rational person that holds decision making capabilities, with the 'capacity to act intentionally, with understanding, and without controlling influences that would mitigate against a free and voluntary act' (McCormick 2013, para. 5). When considering the pacifier for NNS debate, the patient, the preterm infant admitted to the NICU, cannot make that decision for herself, and the legal aspect of consent is waivered to a third party. According to South African law, when a child is under the age of 12, her parents need to give informed consent on her behalf where medical treatment is concerned (Children's Act No. 38 of 2005). This requirement is contained in the HPCSA rules as well (HPCSA Booklet 9 2008). In order for her parents to act autonomously and give proper informed consent, they need to obtain all the information regarding the benefits, risks and potential harm of using a pacifier for NNS. This information is needed to guide the parents to make a decision that is ultimately in the best interest of the preterm infant. Kopelman (1997) said that third party decision makers should

utilise all the information they have available to determine the short and long term benefits of a specific option. The onus will ultimately be on the health care workers to provide the parents with all the necessary information on benefits, risks and potential harm in order for the parents to make a decision in the best interest of their preterm infant.

I will now look at autonomy & informed consent pacifier use for full term infants before autonomy for preterm infants will be discussed.

Autonomy & informed consent: Pacifier use for full term infants

In a hospital without a baby friendly hospital accreditation, pacifiers can be used for all infants. When parents decide to use pacifiers for their full term newborn infants, the decision is made by the parents themselves, as it is not a service or product that is offered to them by the hospitals. The parents, when autonomously making the decision, assume the benefits of pacifier use (see Section 2.5) as well as the risks and potential influence on breastfeeding (see Section 2.6) that the use of a pacifier could have. The parent's decision is often guided by consumer and brand specific marketing; however, the onus is on public health awareness campaigns to inform the parents of the benefits, risks and potential harm that pacifier use could entail. It is unfortunate that consumer and brand specific marketing most often overshadow, and are more successful than public health and social awareness campaigns (Aschemann-Witzel et al. 2012).

Autonomy & informed consent: Pacifier use for preterm infants

Due to the unique challenges of NICUs and preterm infants, the aspects that need to be considered are different from healthy full term infants. I will firstly look at the

ethical aspects that need to be considered in facilities that do not have a baby friendly hospital accreditation; thereafter I will consider the ethical issues in facilities with a baby friendly hospital accreditation.

Private facilities that do not follow step 9 of the BFHI can freely provide pacifiers to the preterm infants in the unit as part of their care and treatment. It is, however, still the parents' right to practise their right to autonomy when deciding if they want to allow the units to give a pacifier to their infants. Many parents arrive in the units with preconceived ideas about pacifiers. Once again, most of these are guided by consumer marketing around pacifiers. Unfortunately the marketing that they will be exposed to are on pacifier use for full term infants, as (according to my knowledge) no public marketing campaigns exist on the benefits, risks or harms of pacifier use for preterm infants. Health care professionals have an ethical duty towards their patients and a legal duty towards the informed consent process. The onus thus now lies on the health care professionals to give the parents the correct facts on the benefits, risks and potential harm of the use of pacifiers for preterm infants in the NICU (Castilho & Rocha 2009) . They should also only prescribe the pacifiers when justifiable reasons allow (Nordic & Quebec working group 2011) and by following recommendations when doing so. These recommendations will be discussed in Chapter 6.

The real ethical dilemma comes into play in facilities that have a baby friendly hospital accreditation, as preterm infants in these hospitals are not even given the opportunity to benefit from pacifier use, and the parents are denied their right to make an autonomous decision in terms of what they believe will be it their child's best interest.

Conclusion

Autonomy and the patient's right to make an autonomous decision is one of the grounding principles within health care and informed consent. A patient should be made aware of all the benefits, risks and potential harm that a treatment can have. In this section, I looked at the duty that health care professionals have towards parents of preterm infants admitted to a NICU. I claimed that parents have the right to know about the benefits of pacifier use for NNS in the NICU. They also have the right to know about the potential influence that such pacifier use could have on breastfeeding success. The parents have the right to choices which they believe is in the best interest of their infants. Should the parents not be given the option of making a choice that they believe is in their infant's best interest, their right to autonomy is taken away from them.

5.3.2 Beneficence

Definition

A beneficent act is one that is done to the benefit of others. In Healthcare it refers to the duty of health care professionals to be of benefit to the patient, act in their best interest and to be active in preventing and removing harm from them (McCormick 2013, Pantilat 2008, Dhai & McQuoid-Mason 2011).

McCormick (2013) points out that health care professionals have an obligation towards their patients to measure and weigh the possible risks of an action / treatment against the possible benefits thereof. In the discussion of beneficence I will consider the conflict between the benefits of pacifier use and the benefits of breastfeeding, as pacifier use could potentially influence breastfeeding. I will argue

that the benefits of pacifier use for preterm infants in the NICU outweigh the benefits of breastfeeding.

The benefits of pacifier use versus the benefits of breastfeeding

There is an apparent conflict between the benefits of using a pacifier and the benefits of breastfeeding, since pacifier use may reduce the chances of successful breastfeeding. Beneficence requires the health care professional to act in the benefit of, or to be of benefit to the patient. Step 9 of the BFHI's ten steps to successful breastfeeding clearly states that no pacifier should be used if a mother is breastfeeding. As mentioned earlier, this applies to full term infants, as numerous studies suggest that pacifier use could potentially influence breastfeeding physiology and lead to a decrease in breastfeeding success rates (Nordic & Quebec working group 2011). The benefits of using a pacifier for preterm infants and the benefits of breastfeeding need to be measured against each other. The health care professional then needs to make recommendations according to his findings.

The Nordic & Quebec working group determined that there is a definite benefit for the use of pacifiers for NNS for preterm infants (Nordic & Quebec working group 2011). As stated earlier, there is, however, a possibility that the incorrect use of pacifiers will also influence breastfeeding. This is especially true for preterm infants during the transition from gavage to oral feeding (Maastrup et al. 2014a, Maastrup et al. 2014b). The suggestion by the Nordic & Quebec working group (2011) is that pacifiers should be given for justifiable reasons. These justifiable reasons will form part of the recommendations for pacifier use that are discussed in Chapter 6. They will help the health care professional in making an ethically sound decision when considering the principle of beneficence.

In Sections 2.5 and 3.3 I discussed the benefits of pacifier use for preterm infants. As indicated in these sections, there is a definite benefit of pacifier use in the NICU, especially when considering the unique challenges that these infants face. The benefits of pacifier use for the preterm infants include self-regulation, pain management and assistance in the maturation of the SSB coordination. A coordinated SSB sequence is needed to have a successful oral feed. Without providing the infant NNS opportunities in the NICU, the transition from gavage feeding to oral feeding will most likely take longer, since NNS in the NICU are linked to a faster transition time from tube to oral feeding (Pinelli & Symminton 2009). This means that by not providing a preterm infant with NNS opportunities, it will likely lead to a delay in breastfeeding initiation, if not a lower degree of breastfeeding success. The desired benefits of breastfeeding and sucking on the breast are thus also less likely to happen when breastfeeding initiation is delayed.

Breastfeeding and breast milk feeding have many benefits for the preterm infant. Some of these benefits were discussed in Section 4.2. They include anti-infective, nutritional, developmental and psychological benefits that cannot be found in infant formula. From the discussion in Section 2.6, it is clear that pacifier use could have a potential influence on breastfeeding, as it may lead to nipple confusion and a decrease in breast milk production. The influence on breastfeeding increases when pacifiers are used inappropriately. This will include giving a (full term) infant a pacifier before breastfeeding or breast milk production is fully established (Castilho & Rocha 1999). It is important to note that the potential influence of pacifier use on breastfeeding is related to feeding breast milk directly from the breast and does not have the same negative effect on breast milk feeding through a bottle.

Pacifier use and NNS can be used in the NICU to overcome the unique challenges that preterm infants are subjected to. These challenges include separation from their mothers, frequent painful interventions and immaturity of their oral feeding skills. I thus claim that since pacifier use in the NICU can help overcome the said challenges that the preterm infant are subjected to, it is more beneficial for preterm infants to use pacifiers than to not have the option of using them at all. My claim is strengthened by the fact that the negative effect of pacifier use on breastfeeding and breast milk production is only potential, and not a given. Should pacifiers be used appropriately in NICUs, the potential negative effect is minimised even more. Recommendations for appropriate pacifier use will be discussed in Chapter 6. From the above discussion, I thus claim that the benefits of pacifier use for preterm infants in the NICU outweigh the benefits of breastfeeding, as most of the benefits of breastfeeding are associated with breast milk properties and not necessarily the act of breastfeeding. The influence of pacifier use on breastfeeding related to the act of breastfeeding itself and not to breast milk properties.

The duty of beneficence in terms of pacifier use is on the health care practitioners working within the NICU, but I would also like to claim that the responsibility should be delegated to our provincial and national Department of Health as well. The Nordic and Quebec working group have done a lot of work on adapting the WHO's 10 steps to successful breastfeeding to make it relevant to NICUs as well. Several countries have followed suit. With the benefits of pacifier use in mind, I hold that the South Africa government should draw up their own set of recommendations and policy guidelines for pacifier use in our NICUs to make the mentioned benefits of pacifier use available for all preterm infants hospitalised in South African NICUs. The recommendations and policy guidelines should include hospitals who wish to keep

their baby friendly hospital status while providing their hospitalised preterm infants with the benefits of NNS.

Conclusion

Beneficence requires health care professionals to act in the benefit of their patients. In this section I argued that the benefits of pacifier use for preterm infants outweigh the benefits of breastfeeding. The claim for my argument is that the benefits of pacifier use are a given and the influence of pacifier use on breastfeeding success is only potential. I further argued that pacifier use will lead to a faster transition to oral or breastfeeding and that without the appropriate use of a pacifier, breastfeeding is more likely to be delayed. In this section I also argued that the duty of beneficence is not only on the health care professional working in the NICU, but also on the provincial and national Department of Health. Their duty is to ensure relevant policy guidelines on the appropriate use of pacifiers in the NICU so that even hospitals with a baby friendly hospital accreditation can safely use pacifiers for NNS in their NICUs.

5.3.3 Non-Maleficence

Definition

Non-Maleficence means to do no harm (McCormick 2013, Pantilat 2008, Dhai & McQuoid-Mason 2011). In the health care field it could relate to not intentionally injuring a patient, or otherwise not harming that patient, by either doing something (i.e. wrongful treatment) or refraining from doing something (i.e. not providing treatment)(McCormick 2013). In the medical fraternity, harm is not always avoidable as most treatment interventions or care come with some associated risks (Pantilat

2008). When considering the associated risks, Dhai & McQuoid-Mason (2011) said that should the harm be unforeseeable, it should nonetheless be kept minimal.

It is not very often that health care professionals will actively harm a patient, however when considering that non-maleficence could also mean to refrain from doing something or providing treatment it opens up ethical issues when a baby friendly accredited hospital does not provide preterm infants with NNS opportunities. The interpretation of non-maleficence in terms of pacifier use in the NICU will be discussed in this section. I open the discussion by referring to the balance between beneficence and non-maleficence. In the pacifier use in the NICU scenario, I refer to the benefit of pacifier use versus the potential influence of pacifier use on breastfeeding success.

In this section I will also argue that infants that are separated from their mothers are harmed in the NICU, but that providing appropriate treatment in the form of a pacifier for NNS can mitigate the harm. When hospitals choose not to allow the use of pacifiers in their NICUs they are not acting non-maleficent.

Non-maleficence versus beneficence

According to Pantilat (2008), the best way to understand non-maleficence, and in order to use it effectively, it has to be balanced against beneficence. In the pacifier for NNS debate, the harm could be the influence of pacifier use on breastfeeding against the benefits of pacifier use, such as physiological stability, earlier discharge home, pain management and earlier transition to oral feeds. It can be argued that the use of pacifiers for preterm infants could lead to breastfeeding problems such as nipple confusion and a decrease in milk supply. The lack of breast milk could then be

potentially harmful to the preterm infant. I argue against this, as with or without the use of a pacifier, the breastfeeding is not necessarily going to be a successful one. There are too many factors that could influence breastfeeding success. Pacifier use of NNS is just one of them. Incorrect pacifier use definitely has a higher risk of causing harm and it is thus important to remember that pacifier use should be done under a set of recommendations (as stipulated in Chapter 6).

Non-maleficence: Preventing harm

In South African NICUs the infants are separated from the mothers for long periods of time. Rooming-in is a recommendation by the WHO in step 7 of the 10 steps to successful breastfeeding and by Maastrup et al. (2014a) in order to increase breastfeeding success rates with preterm infants. This will prevent distress caused by mother and infant separation and will allow the mother to comfort the infant when she is upset, or receiving painful interventions. Unfortunately in South Africa, as discussed in Section 3.2, we experience a lack of space in both our private and public NICUs, thus rooming in is not an option. This separation of the infant from the mother can cause harm in a variety of ways. Infants experience stress and distress when they are separated from their mothers or when they experience pain. This can lead to an increase in Cortisol levels (Laudenslager et al. 1995, Rosenfeld et al. 1991). Cortisol is a stress hormone that is released during periods of stress and distress, and can cause an elevation in heart rate and blood pressure, an increase in blood sugar levels and even interrupt kidney and digestive functions. (Giannakoulopoulos et al. 1994). These fluctuations in the physiological signs of a preterm infant are not only harmful, but can cause disability and even death due to intra-ventricular haemorrhages (Lubbe 2008, p. 196). Separation of the mother-infant

dyad can thus lead to harm of the infant, and the hospitals are not fulfilling their duty of non-maleficence.

Pain experience and subsequent cortisol levels during painful procedures can successfully be managed through a combination of NNS and sucrose while in the NICU (South et al. 2005, Naughton 2013). The distress infants experience when separated from their mothers can partly be overcome by the use of a pacifier for NNS. When hospitals refuse to allow pacifiers into their NICUs due to their baby friendly hospital status, they are indirectly harming them by not providing them with NNS opportunities when they are distressed and experiencing stress. This essentially means that by providing treatment in the form of pacifier for NNS, we can act beneficently and by not providing treatment in the form of a pacifier, we are not acting non-maleficently.

Conclusion

In this section, I compared beneficence to non-maleficence in the pacifier for NNS debate. I argued that the benefits of pacifier use in the NICU outweigh the potential harm it has on breastfeeding. The main claim for my argument is that the benefits of pacifier use are once again a given, while there is many factors that could influence breastfeeding success. Inappropriate pacifier use is just one of them. When a pacifier is used appropriately the potential harm on breastfeeding can be mitigated. I further argued that when preterm infants are separated from their mothers (due to the lack of space in the NICU); the infants are harmed due to the release of stress hormones. Using a pacifier for NNS for the preterm infant can mitigate the harm, as one of the benefits of pacifier use is to calm the infant which will lead to a reduction in the secretion of the stress hormone Cortisol. I also argued that the frequent painful

interventions that the preterm infant typically undergoes, can also lead to harm of the infant. By using a pacifier, the harm can also be mitigated. I thus claim that by not providing a preterm infant with a pacifier, we are not acting non-maleficently, as we are not providing treatment to prevent harm.

5.3.4 Justice

Definition

Justice refers to fairness and an equal distribution of resources within society (McCormick 2013). Within the health care setting, justice is mainly associated with distributive justice which refers to equal allocation of resources. Cookson and Dolan (2000) describe the egalitarian principle within justice as the allocation of resources to minimise inequality in health, and describes a form of the equalising principle as one that focus on equalising a patient's opportunity to health. In broad terms this means that persons who are equals should qualify for, have access to, equal treatment, resources and opportunities. In this case the equal treatment refers to providing pacifiers for all preterm infants in all the NICUs.

Equal distribution of treatment

To apply the principle of justice to the pacifier for NNS debate, I will look at the distribution of the benefits of NNS and pacifier use in hospitals with and without a BFHI accreditation. I will argue that preterm infants are equals, irrespective of which hospital they are admitted to and that hospitals that do not allow the use of pacifiers in their NICUs are not observing the principle of justice.

As established in Section 2.5 and 3.3 there is a definite benefit in using pacifiers for NNS for preterm infants admitted to a NICU. All preterm infants are equal, irrespective of whether they are admitted to a hospital with a BFH accreditation or one without. Section 9 of the South African Constitution (1996), also known as the equality clause (Meyer 2010), says that '(1) everyone is equal before the law and has the right to equal protection and benefit from the law'. Since our Constitution is the highest law in the country, Section 9 is seen as complimentary to all other sections of our Constitution (Meyer 2010). What is meant by this is that a section such as Section 27 which states that '(1) everyone has the right to have access to (a) health care services' means that every person in South Africa has equal rights to equal health care services irrespective in which hospital they are admitted to.

Hospitals that have a baby friendly accreditation do not allow the use of pacifiers for their preterm infants, and these infants miss out on the opportunity to benefit from the use of pacifiers while they are admitted to the NICU. On the other hand, hospitals that do not have a baby friendly hospital accreditation allow the use of pacifiers for their preterm infants, and these infants have the opportunity to benefit from pacifier use. The benefits that they can enjoy include the ability to self-regulate with a pacifier, the opportunity to experience less pain during a painful stimuli and a faster maturation of their SSB coordination which will ultimately lead to faster oral feeding and a quicker discharge home.

When considering justice in terms of the pacifier use for NNS in the NICU debate, we are not concerned with the rationing principle, in other words the concern is not the distribution of pacifiers, but rather the opportunity to use a pacifier for NNS and gain from the benefit thereof.

I thus hold that these preterm infants admitted to the NICUs are not receiving equal health care services due to adherence to the BFHI policy which does not allow certain hospitals to not use pacifiers for their preterm infants. The principle of justice is thus not upheld between the two different hospitals.

Conclusion

Within this section I argued that all preterm infants are equal and should have equal access and opportunities to benefit from pacifier use. I claim that hospitals with a baby friendly status that do not allow the use of pacifier in their NICUs are not upholding the principle of justice.

5.4 Conclusion

In this chapter I looked at the principlism framework to better highlight the ethical issues relating to pacifier use for preterm infants within the NICU. The principlism framework consists of the four bioethical principles namely autonomy, beneficence, non-maleficence and justice.

In this chapter, I have argued that health care professionals have an ethical duty towards their patient to inform them of all the benefits, risks and potential harm that using a pacifier for NNS could have for the preterm infant. The health care professionals further have a legal duty towards the informed consent process that requires parents to be made aware of all the benefits, risks and potential harm of a treatment in order for them to act in the best interest of the infant. In hospital with a baby friendly hospital status, the parents are not given the opportunity to make a decision regarding pacifier use, as the policy does not allow for the use of pacifiers. Their right to an autonomous decision is thus revoked from them.

I further argued in the section about beneficence that the benefits of pacifier use for preterm infants outweigh the benefits of breastfeeding. The claim for my argument is that the benefits of pacifier use are a given and the influence of pacifier use on breastfeeding success is only potential. I further argued that pacifier use will lead to a faster transition to oral or breastfeeding and that without the appropriate use of a pacifier, breastfeeding is more likely to be delayed. In this section I also argued that the duty of beneficence is not only on the health care professional working in the NICU, but also on the provincial and national Department of Health to ensure relevant policy guidelines on the appropriate use of pacifiers in the NICU.

In the section on non-maleficence I first compared beneficence to non-maleficence in the pacifier for NNS debate. I argued that the benefits of pacifier use in the NICU outweigh the potential harm it has on breastfeeding. The main claim for my argument is that the benefits of pacifier use are once again a given, while there is many factors that could influence breastfeeding success. I further argued that when preterm infants are separated from their mothers (due to the lack of space in the NICU), the infants are harmed due to the release of stress hormones. Using a pacifier for NNS for the preterm infants can mitigate the harm, as one of the benefits of pacifier use is to calm the infant which will lead to a reduction in the secretion of the stress hormone Cortisol. I also argued that the frequent painful interventions that the preterm infant undergoes can also lead to harm of the infant. By using a pacifier, the harm can also be mitigated. I thus argued that by not providing a preterm infant with a pacifier, we are not acting non-maleficently, as we are not providing treatment to prevent harm.

Within healthcare justice is linked to distributive justice and equalising opportunities. I argued that all preterm infants are equal and should have equal opportunities to the benefits of pacifier use. I argued that hospitals with a baby friendly hospital accreditation are not adhering to the principle of justice as they are denying their preterm infants the benefits of pacifier use.

From this chapter it is clear that from an ethics perspective the use of pacifiers within the NICU is justified. In the next chapter I will address the appropriate use of pacifiers by suggesting a set of recommendations for pacifier use within the NICU. These recommendations will include the use of pacifiers for preterm infants within a hospital that has a baby friendly hospital status.

6. Recommendations

The Nordic & Quebec working group (2011) suggested an expanded version of the 10 steps to successful breastfeeding. As mentioned earlier, it adapted step 9 to allow for pacifier use under 'justifiable reasons.' These justifiable reasons have not been clearly defined. To remedy this shortcoming, I will suggest justifiable reasons as part of my recommendations below. When considering the benefits for the use of pacifiers for NNS and the potential harm it could have on breastfeeding, as well as taking note of the ethical dilemmas associated with pacifier use in both hospitals that are accredited as baby friendly and those that are not, I suggest the following recommendations for pacifier use in the NICU:

Hospitals should have a policy on the usage of pacifiers for NNS in the NICU.

A policy ensures that protocol is being followed. This is to ensure that pacifiers are used appropriately in order to minimise the effect of pacifier use on breastfeeding success. The protocol will include the recommendations below.

Pacifiers will only be available on prescription basis by the Pediatrician / Neonatologist and Speech Therapist.

Pediatricians / Neonatologists are the primary caregivers of newborn infants admitted to the NICU, whilst a Speech Therapist's primary role in the NICU is to ensure that a preterm infant's sucking abilities are maximised (Harding, Law & Pring 2006). These two health professionals are thus the specialists on preterm infant sucking abilities and would be the best professionals to appropriately prescribe pacifiers. Pacifiers should only be available on prescription basis as each infant is unique, with their own unique challenges and unique circumstances. The pediatrician

and the speech therapist should consider the recommendations below in order to minimise the potential influence on breastfeeding (as was discussed in Section 2.6).

Pacifiers will only be prescribed to infants who are separated from their mothers. If a mother is able to offer her infant NNS opportunities on an expressed breast it should be preferred above the use of a pacifier.

The benefits of a pacifier for newborn infants can overcome some of the challenges that preterm infants experience in the NICU. These challenges, as highlighted in Section 3.2, are mostly due to mother and infant separation. Should the mother-infant dyad not be separated from each other, the mother can calm the infant with her presence, or offer the infant her emptied breast for NNS opportunities. The emptied breast will perform the same function as the pacifier, with the added benefit of closeness to the mother.

Pacifiers should be used for NNS while the infant receives painful interventions and during gavage feeding. During painful stimuli, a sweet substance like breast milk or sucrose can be offered with the pacifier.

In Secton 2.5 and 3.3 I looked at pain management as a benefit of pacifier use and NNS. Should an infant be separated from her mother, a pacifier should be used during painful interventions. The pacifier (as mentioned in the said Sections) will help mitigate the experience of pain. Breast milk or sucrose will further add to the pain management effect of the pacifier (See Sections 2.5 and 3.3). Should the mother be present, she can offer her expressed breast during the painful intervention, or autonomously choose to provide the infant with a pacifier.

Providing an infant with a pacifier to suck on during gavage feeding will help mature the SSB coordination (See Section 2.5 and 3.3). This will also aid in the effort to stimulate the sucking reflex appropriately. Should the mother be present, she can offer her expressed breast to the preterm infant during gavage feeding. In such an instance the possible risk of nipple confusion (between the pacifier and the breast) will be eliminated.

Once breastfeeding (on the breast) is being initiated, pacifier usage should be minimised or preferably. A pacifier should only be offered during painful stimuli or periods when the infant cannot be consoled.

One of the main benefits of pacifier use is the positive effect it has on the maturation of the SSB sequence (See Section 3.3). Once that sequence is coordinated, and breastfeeding is established, the benefit of the pacifiers in that regard is no longer needed. Providing an infant with a pacifier without a specific reason (like during a painful intervention or periods that the infant cannot be consoled) could then lead to nipple confusion.

Prescribed pacifier should be appropriate for the infant's age and weight to limit orthodontic influences and still minimise the effect on breastfeeding (Castilho & Rocha 2009, Ferrante et al. 2006)

Guidelines in the literature on the correct size and shape of a pacifier includes the following: Infants with a gestation of less than 32 weeks or weighing less than 2kg should receive a pacifier that is similar to the infant's thumb in order to promote tongue cupping. The nipple of the pacifier should be long with a bolus on the end to reach and stimulate the limbic system. The mouth shield should be large and soft to

stimulate nerve endings around the mouth the way the breast would do. A handle on the shield of the pacifier will support a hand to mouth position which also aids in self-soothing.

For a preterm infant that is older than 32 weeks gestation, or weighs more than 2 kg, the same principles apply. The only difference is in the shape of the pacifier. The pacifier should be similar to a mother's nipple. This will also promote tongue cupping (Lubbe 2008, p. 138 – 140).

Pacifiers should be sterilised according to NICU protocol

Preterm infants already have a compromised immune system. Pacifiers should be prescribed for single patient use and sterilised according to NICU protocol. This should be done in order to minimise opportunistic infections.

Parents should sign an informed consent form when choosing to use a pacifier. They still have the autonomous right to decide to refuse pacifier usage.

Parents should be informed about all the benefits of pacifier usage, as well as the potential harms and influence it could have on breastfeeding success. This is part of the health care professional's duty towards their patient (See Section 5.3.1). If a pacifier is prescribed to an infant, the parents need to sign an informed consent form. The form should state that the parents understand the benefits, risks and potential harm of pacifier use. Parents also have the right to refuse the use of a pacifier.

7. Conclusion

The WHO has done great work at increasing the number of infants who breastfeed through their BFHI campaign. The BFHI's 10 steps to successful breastfeeding is, however, written for healthy full term infants. The need for a policy that addressed the unmet need of preterm infants in the NICU has been acknowledged by the WHO and other international lobby groups. The lack of international directive leaves hospitals with ethical dilemmas when they have to comply with the BFHI, but also look after the needs of preterm infants. The South African National Department of Health needs to address this dilemma and come up with a set of guidelines on how to maintain the BFHI while still looking after the needs of preterm infants in our NICUs.

When looking at the priciplism framework, it is clear that the benefits of pacifier use for preterm infants in the NICU outweigh the potential harm and influence it could have on breastfeeding success. These benefits include the self-soothing properties of NNS, the positive effect is has on reducing the pain experience and lastly the role it plays in maturation of the SSB sequence. It is especially the role it plays in developing the SSB sequence that warrants the use thereof in all NICUs. When adhering to the stated recommendations, it is quite evident that preterm infants will be able to have the benefit of pacifiers use for NNS in the NICUs while still having the best possible chance at a successful breastfeeding journey.

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Legislation

Children's Act No 38 of 2005

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