

# Concepts of care of the new born



**ASSIGN  
BUSTER**

The following reflection will analyse the issue of post natal head moulding which has been observed in practice in very low birth weight (VLBW) infants especially those born at 23-32 weeks gestation. I have also observed that when these infants are ready for discharge this flattened head shape is obvious. Therefore I will analyse the available research on post natal head moulding in order to increase my knowledge. I will also identify ways in which head moulding could be prevented or minimised and hope to create increased awareness among parents and staff of how this could be achieved.

Post natal head moulding usually occurs in very low birth weight infants who require ventilation for a long period and who are often restrained by equipment which inhibits normal movements. As a result the shape of the premature infants' head changes in comparison with the term infant becoming increasingly flattened on the sides (Rutter et al 1993). It has also been observed that the sleeping position of infants on their backs for a prolonged time to avoid sudden infant death syndrome has also caused a distinct increase in deformational or positional occiput flattening (Marshall et al 1996; Huang et al 1996; Mulliken 1999).

De Myer 2002 supports this finding also stating that when young babies lie too much on their back, the occiput becomes symmetrically flattened. Cubby (1991) observed that due to the weight of a large head resting laterally on the hard surface and because of poor neck muscle tone, progressive head flattening occurs in preterm babies. This results in cranio facial deformation which is caused by local deforming forces as the preterm infant lies with the head to one side or other, is relatively immobile and the skull bones are thin and soft.

According to Chan et al (1993) spontaneous head repositioning is not possible until the neck and shoulder muscles develop and the infant's condition improves. The American Academy of Paediatrics (1992) recommended avoiding use of the prone position in order to reduce the risk of sudden infant death syndrome. Since this recommendation asymmetrical head shape in infants has increased markedly (M. Hemingway-2000).

Premature infants are nursed in a supine position with the head on lateral side to facilitate easy observation and to accommodate umbilical catheters and ventilation tubing (Lioy and Maginello1988), in practice.

Hallsworth (1995) points out that very often; little or no attention is paid to the positioning of premature babies by medical and nursing staff this could be because the initial priority is to facilitate the baby's physical needs.

Hallsworth (1995) recommends that positioning should aim to avoid the development of a flattened head shape and other complications such as shoulder retraction and excessive hip abduction. Warren (1992) states that some positions are better than others.

Hemingway (2000) supports this recommending that repositioning of the baby helps to improve cranial vault symmetry and can prevent cranial moulding suggesting that nursing interventions can be used such as alternative mattress surfaces and frequent repositioning. Hallsworth (1995) added that there are many implications for the short and long term outcomes of premature neonates, both physical and psychological as a result of poor positioning, therefore preterm infants should not be viewed as developmentally the same as term infants.

Turrill (1992) explains how as the infant's body grows, the structure calcifies, leading to an alteration in the head shape with flattening of the sides of the head producing a high narrowed forehead with eyes seeming laterally placed, on a long narrow face. Littlefield et al (2001) and Turk et al (1996) agreed that all or a combination of these may result in facial irregularity or deformation. Merenstein and Gardner (2011) states that parents will be apprehensive with their babies who have a malformed head because they feel their infant is less attractive and good-looking than a term infant.

Cubby (1991) identified that premature babies may be at an increased risk of child abuse and neglect and may be judged as less attractive compared to the term infants. This may have an implication for the infant-parent relationship suggesting that the parents may find it difficult to bond with their baby due to the altered appearance. According to Chan et al (1993) cranial head moulding may reduce the infant's ability to obtain a nurturing reaction from care givers, leading to failure to bond and poor development outcomes.

Hemmingway and Oliver (1991) state that bilateral head flattening with an lengthened face has been seen to persist to some degree in preterm infants up to 18 years, presenting long-term physical and psychosocial deformities. In my opinion this may have a negative impact to a teenage child whose focus in this period is on his/her general appearance and are worried what other people will think of them. Young (1994) recommended the use of aids such as water pillows, water beds , air filled mattresses , doughnut shaped head supports and regular changes in head position to alternate sides in order to prevent bilateral head flattening.

The head can be supported to enable occipital lying, when in supine position which according to Cartlidge and Rutter (1988) is the only position which helps to reduce the incidence and severity of head flattening. This can be achieved in practice by using a soft roll or small sheet closely contouring the head whilst ensuring that it is loose enough to provide some mobility (Boxwell 2010). Chan et al (1993) carried out a study to determine the effects of a pressure relief mattress on postnatal head moulding (PHM) in very low birth weight infants .

They used 128 infants at 24-36 weeks gestation weighing less than 1500 grams who were without any congenital or acquired anomalies. The control group was nursed on a standard firm mattress and a study group were placed on a pressure relief mattress (PRM) within 72 hours of birth. Both groups had similar nursing care including repositioning 3-4 hourly from side to side. The occipito frontal, anteroposterior and biparietal diameters of head circumference were measured using an electronic digital calliper at day4, day7, then weekly until the infant reached 2000gms or was discharged.

The findings revealed no significant differences between the two groups and concluded that the use of pressure relieving mattress did not reduce PHM in VLBW infants. When analysing it, the PRM failed to reduce the head moulding probably due to the fact that the head volume continues to increase in the presence of local constraint such as a mattress and the rapidly growing brain conforms to the surface of the mattress with soft skull bones flattening. Comparing the use of water pillows and standard mattress in the care of 30 weeks gestation twins with similar birth weights (Marsden 1980) demonstrated less head moulding.

However this was a small study which also failed to take the initial measurements and therefore might not be conclusive. In practice a ventilated baby's head is supported with gel wedgies and turned from side to side four hourly to minimise head flattening. The physical appearance becomes evident and severe head flattening can be observed despite of this, once the infant's condition improves. Rutter et al (1993) carried out a study to determine if head flattening can be reduced using a soft air filled mattress rather than a conventional firm incubator/cot mattress.

This study included 31 infants weighing 990-1850grams at 26-31 weeks gestation. Nine boys and six girls were nursed on the firm mattress while eight boys and eight girls were nursed on the air mattress. Their head shape was monitored over three weeks and a flattened head shape was more marked in the group who were nursed on the firm mattress with a difference was noted within few days. They concluded that head flattening in early infancy can be reduced if nursed on a soft air filled mattress.

A follow up study using these infants has carried out at the mean age of 3. 7 years to ascertain whether head flattening persisted. A total of 28 children with a mean age of 4 years were included as the control group. The results showed no difference between the two groups. However, within each group the mean occipitofrontal to biparietal diameter ratio was higher in boys than girls, more significantly in the control group, which revealed the fact that in reality boys tend to have a bigger bone structure than girls.

Schultz (2008) studied on 81 VLBW infants with 40 cared on a standard mattress and 41 using a gel pillow. The cephalic index was measured with a

digimatic calliper on entry to the study and weekly thereafter until the babies has been transferred or discharged. There was no significant difference on entry, 5 weeks post intervention or at ten weeks post intervention. But there was less moulding overtime for smaller infants on gel pillows who were hospitalised longer.

Conversely, the sample size was too small to detect statistical significance. From these results, it was concluded that head flattening resolves with time. They recommended that although deformity has been shown to resolve with time, the effort to prevent this deformity is paramount. Turril (1992) also explains that, by laying babies on quilts and sheep skins, the pressure of the hard mattress spreads out as the surface contours to the shape of baby rather than the baby conforming to fit the mattress.

The effects of head flattening on the physical appearance and psychological development found by Hallsworth (1995) has long term implications for VLBW babies. The use of a soft yielding mattress and gel pillows demonstrated by Rutter et al (1993) and A. A. Schultz (2008) in early weeks of life effectively prevents postural deformity. Recent changes in current practice by incorporating positional changes and use of the available aids is an important consideration.

This helped me to view the post natal head moulding with a new perspective and to recommend the use of correct positioning techniques. Nurses should receive further education on how to position babies to prevent the long term problem such as head moulding. I suggest that more research is needed to validate the findings and to discover the ideal surface on which the babies

can be nursed in the incubator. This allied with the use of good positioning techniques could help to prevent head moulding becoming a long term problem as the infant grows.