



Teaching Parents How to Prevent Acquired Cranial Asymmetry in Infants¹



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Received 9 July 2015; revised 16 December 2015; accepted 18 December 2015

Key words:

Guidelines;
Infant cranial asymmetry;
Infant safety;
Nonsynostotic plagiocephaly;
Nurses' instruction;
Primary prevention

Acquired cranial asymmetry is prevalent in infants today. This is largely attributed to the supine sleep position recommended for infant safety. The condition can become permanent, so prevention and early detection are important. A prevention project was initiated where guidelines for Swedish child health nurses were developed, tested in a pilot study, revised, and then incorporated into a short cranial asymmetry prevention program for nurses. The program included detailed information on what to teach parents of newborns. An intervention study was initiated where one group of nurses was taught according to the program and the other group followed the standard recommendations. The aim of this survey was to compare intervention and control group parents' responses regarding the cranial asymmetry prevention information that they had received from their nurses during their infant's first four months. Participants included 272 parents (180 intervention group, 92 control group) at 26 child health centers. A checklist was distributed to parents in conjunction with infants' four month health checkup. A significantly higher percentage of intervention group parents were aware of regular recommendations – alternate direction of the infant's head when putting the child to bed (82%: 64%, $p = 0.001$), which pillow to use (92%: 80%, $p = 0.01$), and when to remove the pillow (48%: 31%, $p = 0.006$) – and five newly introduced recommendations compared to controls. Results indicate that educating child health nurses on prevention of cranial asymmetry works to increase parental awareness of what to do and how to do it safely.

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Acquired cranial asymmetry is often referred to as nonsynostotic plagiocephaly (NSP). It develops prenatally or postnatally from external pressure on the moldable skull of infants (Littlefield, Saba, & Kelly, 2004). In a clinical classification study, Wilbrand, et al. found three

groups of NSP: plagiocephaly which is skewed head form, brachycephaly which is flat head form, and a combination of the two (Wilbrand et al., 2012). A rise in the incidence of NSP was noted in several American tertiary care centers in the 1990s, and this was largely attributed to parents following the recommendation to place infants supine when they sleep in order to prevent sudden infant death syndrome (SIDS) (Argenta, David, Wilson, & Bell, 1996; Biggs, 2004; Kane, Mitchell, Craven, & Marsh, 1996). It was estimated that 46.6% of seven-to-twelve week old infants had NSP in a recent Canadian cohort study (Mawji, Vollman, Hatfield, McNeil, & Sauve, 2013). In a Swedish study, 42%

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¹ All those entitled to authorship are listed as authors. All authors meet the criteria for authorship and have approved the final version of the manuscript. All authors declare no conflicts of interest.

of two-month-old infants had some degree of NSP (Ohman, Nilsson, Lagerkvist, & Beckung, 2009).

The first four months is the critical period for development of NSP acquired postnatally, and NSP seems to peak at four months (Hutchison, Hutchison, Thompson, & Mitchell, 2004). There is a risk of permanent asymmetry after six months of age (Lauritzen & Tarnow, 1999). In a recent study of five-to-six month old infants with moderate to severe NSP in the Netherlands, 74% of infants in the treatment group and 77% of infants in the natural course group had not fully recovered six months later (van Wijk et al., 2014).

Early Intervention

There is a “window of opportunity” for NSP prevention, when the cranium is less calcified and growth is at a maximum (Najarian, 1999). The early postnatal period is the most propitious time to prevent NSP because the newborn’s head is very formable and newborns begin adapting to parental care practices, so early information to parents is important. In their Clinical Report, the American Academy of Pediatrics (AAP) recommends that primary care providers counsel parents about this by the time infants are two to four weeks old (Laughlin, Luerssen, & Dias, 2011). Shweikeh, et al. did an analysis of the literature on effectiveness of current NSP prevention guidelines. They examined 15 relevant studies closely. These researchers concluded that educating parents on NSP prevention as early as possible through clearer guidelines and close monitoring is central in preventing and managing this common condition (Shweikeh, Nuno, Danielpour, Krieger, & Drazin, 2013).

The impact of early intervention in the newborn environment was investigated in a study of 139 healthy term neonates at two hospitals in France. They found that each supplementary hour of immobility during the third and fourth months of life doubled the risk of NSP at four months. This research group recommended informing parents how to reduce the risk of NSP on the maternity ward (Cavalier et al., 2011).

Risk factors for NSP and appropriate time frames for prevention messaging were investigated at four Canadian child health clinics in a prospective cohort study. The conclusion was that advice to vary an infant’s head position needs to be communicated well before the two-month health checkup. These authors recommended that parents be educated prenatally or in the early neonatal period (Mawji et al., 2014).

Research Questions and Aim

The aim of this study was to compare intervention and control group parents’ responses regarding the NSP prevention information that they claimed they had received from their nurses by the time their infants were four months old, including parental awareness of recommendations, safety aspects, type of information, and satisfaction with information. There were two research questions: What did

parents claim their nurses had taught them about NSP prevention? Did parents learn more details of NSP prevention when their child health nurses had participated in our program?

Methods

Preceding Research

In an attempt to prevent NSP, guidelines for child health nurses working with parents of infants were developed in a literature study (Lennartsson, 2011a), tested in a pilot study (Lennartsson, 2011b), and revised. A short educational program incorporating these revised guidelines was subsequently developed for these nurses who are public health nurse specialists or pediatric nurse specialists. Our program included instructing child health nurses to convey detailed NSP prevention recommendations to parents by the time the infant is two weeks old and to do monthly infant cranial asymmetry assessments for at least the first four months. These are nursing actions that can be incorporated into our child health program without requiring extra visits.

Then we initiated a longitudinal intervention study at 26 child health centers in Skaraborg County of Sweden in 2012. Child health nurses in the intervention group were taught according to the new program and instructed to work according to the guidelines. Child health nurses in the control group worked as usual, and informed parents according to the Swedish National Board of Health and Welfare recommendations (Socialstyrelsen, 2006). Nurses in both groups informed parents about cranial asymmetry prevention when they deemed it was appropriate, including the first home visit, the first clinic visit, and any ensuing child health clinic visit.

Design

This was a cross-sectional survey nested in the intervention study. In this study we examined what information parents had been receiving from their child health nurses while the prevention “window of opportunity” was open. It was a comparison between two groups exposed to different sources of NSP prevention information, an intervention group exposed to NSP prevention information according to our new program and a control group exposed to the standard NSP prevention information. Table 1 lists the information that nurses in the two groups received. Figure 1 illustrates several ways parents can be taught to avoid pressure on the back of their infant’s head.

Data collection forms were distributed to parents by assessors who went to the clinics to do cranial asymmetry assessments in conjunction with the infants’ four-month health checkups. Parents had the opportunity to ask them questions. If interpreters were present at the four-month health checkups because parents had language difficulties, they also interpreted the data collection form for these parents. Parents filled in the form and then handed it back to the assessor. The filled-in forms were placed in an

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