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Infant Flat Head Syndrome: Unexpectedly Common, Early Appearing, and Multi-National

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Why are babies wearing helmets?
It's a treatment for flat head syndrome or **deformational plagiocephaly** (DP) due to pressure on the malleable skull in the first months of life.



Recent evidence suggests high DP rates: of healthy Canadian 3- to 4-mo-olds, **47% had at least mild plagiocephaly** at clinic visits (Mawji et al 2013).

What could cause this? The favored explanation is that babies are left too long on their backs to lower risk of SIDS. We suspected other factors.

Hypothesis: Prolonged equipment use maintains back of head against a solid surface and increases risk of DP.

METHOD

Recruitment

Googling for developmental phrases like *3 month old baby* or *my baby progress*, triggered text ads.

Your baby's development
www.milestoneshome.org
Join univ study of infant equipment & milestones in 2- to 4-mo-olds!

Clicking on the ad led to a study description, a consent form, and an online survey with questions about milestones, equipment usage, and health. **684 two- to seven-month-olds** comprised the analysis sample.

Measures

Equipment Time

Parent estimated the typical daily minutes baby spent in each of 8 types of equipment. Times were summed (Mdn = 150 mins) and normalized (square root) to create an Equipment Time variable (M=11.5, SD=5.4).



Do you use a car seat (such as those above)?

Yes

No

Move the circle along the line to estimate the total minutes spends in a car seat on a typical day



Head Shape

Key health item presented 4 head shapes (based on Argenta, 2004).



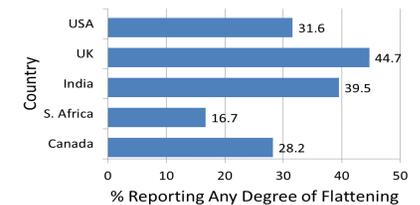
Some babies' heads show a flattening at the back, which we'd like to ask about. Place Sam on your lap facing away from you. Look down so you can see the top of the Sam's head and his eyelashes as shown in the above photo. Compare the shape of Sam's head to each of the following drawings and click on the one that most closely matches his head shape.



The percentage of parents choosing each head shape is shown. We collapsed the three rightmost items into an *Any Flattening* category. **35% of the sample reported some degree of head flattening.**

RESULTS

Equipment Time was the dependent variable in a Gender (2) by Month of Age (6) by Head Shape ANOVA (4). All effects were *ns*. **Flattening is already present by 2 months**, and there is **no evidence for a link between equipment time and head flattening**. However, there were unexpected and large country-to-country differences in the prevalence of flattening.



DISCUSSION

About a third of parents reported some flattening, mostly mild, and it was present by 2 months. Striking international differences may provide crucial clues about which factors are influential. Sequelae are unclear.

Selected References

- Argenta, L. (2004). Clinical classification of positional plagiocephaly. *The Journal of Craniofacial Surgery*, 15(3), 368-372.
- Mawji, A., Vollman, R. A., Hatfield, J., McNeil, A. D., & Sauvé, R. (2013). The Incidence of positional plagiocephaly: A cohort study. *Pediatrics*, 132(2), 298-304.

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