WSPOS Spectacle Frames for Children Consensus Statement =>

Spectacle frames for children should be designed differently from adults' frames, paying attention to some important morphological differences that characterize pediatric facial features. There are several parameters including interpupillary distance, inter-orbital distance and position of the vertex of the cornea relative to the lateral orbital wall (exophthalmos) which change the most between 5-15 years of age. This means that for spectacle or glasses' frames for children must be fitted accurately and likely need changing more regularly than those of an adult's to ensure a continued good fit. In doing so the use of spectacles in children will be a more effective and positive experience increasing compliance.[1-6]

The shape and proportions of the skull of a young child are rounder than that of an adult; the nares together with the nasal bridge are not fully formed and so, unable to support eyeglasses as in an adult. This either transfers the role of support to the glabella or requires the use of thick silicone nose pads in the form of a strap or saddle[7]; additionally less prominent eyebrows require a frame that more closely fits the face. An improper fit decreases comfort and effectiveness of the frame and leads to spectacle wear failure[3-4].

The ideal spectacle frame for children should take into consideration several important factors including:

1) Materials: The ideal frame should be robust but flexible, atraumatic and also able to absorb impact, avoiding sharp edges or corners to minimize possible injurious effects. The choice of bio-compatible, hypoallergenic, non-toxic, and easily washable materials are additional fundamental features in the design of eyeglasses for children. Since children are physically more active than adults, glasses may be secured to the head either by a strap or by flexible ear- pieces. In addition, children with only one seeing eye ideally should be fitted with a polycarbonate lens for enhanced ocular safety.[8]

2) Optics: From an optical point of view the frames should be made to ensure stability and proper centration, through the support of the upper part of the nasal pyramid.

3) Psycho-Social Impact: Although the aesthetic appeal of the glasses is not their key feature, it cannot be overlooked. Studies have shown that compliance of wearing glasses in under 8 year olds has less to do with vision or improvement in vision but more to do with fit and what peers think.[6,9]

4) Ethnic Differences: More and more it is becoming clear that there are significant differences in the craniofacial anthropologic size and ratios among different ethnic groups[10]. This means that one spectacle frame design is unlikely to be suited to every child treated in an increasingly cosmopolitan environment where children of varying ethic origins may be seen and treated.

Final Comment:

The WSPOS encourages

- **Parents** to pursue well-fitting spectacle frames for their children to increase compliance and thereby enhancing vision.
- **Eye care professionals** to design novel studies determining those factors that influence spectacle compliance in children from different regions of the world.
- **Manufacturers** to develop enhanced spectacle frames for children using the evidence base to optimize compliance, including recognition of ethnic and cultural variations which influence fit and aesthetics respectively.

Selected References:

1. Kodjebacheva GD, Maliski S, Coleman AL. Use of Eyeglasses Among Children in Elementary School: Perceptions, Behaviors, and Interventions Discussed by Parents, School Nurses, and Teachers During Focus Groups.. Am J Health Promot. 2014 Apr 9. [Epub ahead of print]
2. Li L1 , Lam J, Lu Y, Ye Y, Lam DS, Gao Y, Sharma A, Zhang M, Griffiths S, Congdon N. Attitudes of students, parents, and teachers toward glasses use in rural China. Arch Ophthalmol. 2010 Jun;128(6):759-65.
3. Woodhouse JM1, Hodge SJ, Earlam RA. Facial characteristics in children with Down's syndrome and spectacle fitting. Ophthalmic Physiol Opt. 1994 Jan;14(1):25-31.
4. Rooney J. Fitting children with glasses. J Ophthalmic Nurs Technol. 1995 Jan-Feb;14(1):29, 33.
5. Wang YJ(1), Hong RZ, Wei XJ, Ai YD, Zhao Y. Analysis of anthropometry on head and eye for stipulating of children's spectacle frames Zhonghua Yan Ke Za Zhi. 2005 Jan;41(1):20-3.
6. Horwood AM. Compliance with first time spectacle wear in children under eight years of age. Eye (Lond). 1998;12 (Pt 2):173-8.
7. Tate GW Jr, Stenstrom WJ, Kulick C. A molded silicone nosepiece for children's eyeglasses. Am J Ophthalmol. 1974 Oct;78(4):726
8. Rychwalski PJ, Packwood EA, Cruz OA, Holds JB. Impact resistance of common spectacle and safety lenses to airgun and rimfire projectiles. J AAPOS. 2003 Aug;7(4):268-73.
9. Walline JJ, Sinnott L, Johnson ED, Ticak A, Jones SL, Jones LA. What do kids think about kids in eyeglasses? Ophthalmic Physiol Opt. 2008 May;28(3):218-24.
10. Mahdi E. Assessment of facial and cranial development and comparison of anthropometric ratios. J Craniofac Surg. 2012 Mar;23(2):e75-83