SCIFED Publishers

Raju Kaiti , SF J Ocular Biology, 2017, 1:1

SciFed Journal of Ocular Biology

Mini Review Open Access

Pediatric Spectacle Dispensing- An overview

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Coverage of spectacle wear is unsatisfactory in developing countries like Nepal. Most unsatisfactory is the fact that even when spectacles are prescribed, children have unwillingness to wear them because of stigma, ignorance and negative parental attitudes etc. In the context of developing countries like Nepal, negative parental attitude to wearing spectacles is a major barrier to refractive correction in children. There are also groups who can't afford spectacle. There are also geographical constraints for easy accessibility and dissemination of spectacle. Even in reachable areas and within affordable groups, dispensing spectacle especially to pediatric populations is terrible and needs quick attention.

Fitting Pediatric clients with eyewear may be one of the most challenging task, yet most rewarding opportunities in dispensing [1]. It requires great communication and listening skills, special fitting techniques, and patience in dealing with both the children and their parents. Tradition has been that, we often don't help children choose their frames, instead letting the parents performs this role, and we only seem to show the free range or the low cost options. As a result, children's eyewear and management tend to be a little hit and miss in many practices.

Frequent prescription change and long-term patient-practitioner relationship than with adult clients are more important things to be considered during pediatric dispensing. Though most spectacles dispensed to children are of low monetary value, they are very close in follow-ups and a good relationship between the practitioner and the child can be established at an early age [2]. These will counteract the low monetary value. Also, assuring the parents that their children are being well looked after, it is likely the whole family will become loyal patients. Hence, pediatric dispensing is a good practice builder, as well as very rewarding.

Pediatric dispensing differs from adult dispensing in various ways [3]. The most important one is 'duality of the patient', where the dispenser is dealing with two patients – the child and the parent. Pediatric dispensing is not merely for the correction of the refractive error. Children may also require spectacles to correct binocular vision anomalies, such as strabismus, amblyopia or convergence problems, and others [2]. Compared to adult dispensing, pediatric prescription analysis requires additional considerations. These include the patient's mental age, stage of visual development, common ocular problems encountered, visual acuities attained, and any extra information gleaned from the child/parents.

Pediatric frames

Children should not be considered as "scaled-down versions of adults" [2]. Their facial contours are quite different from adults and, importantly, are still developing; hence they require special frames designed for them, not the small adult ones. To dispense a child properly, there is a need to understand these differences. Selecting children's frames is a herculean task and for this, many criteria must be met [2].

• The frame must fit correctly (anatomically)

• Ensure that the pupillary center and optical center of the lenses are correctly centered

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Received August 03, 2017; **Accepted** November 20, 2017; **Published** November 30, 2017

Citation: Raju Kaiti (2017) Pediatric Spectacle Dispensing- An overview. SF J Ocular Biology 1:1.

• The frame should be comfortable and durable

• The frame must not hamper the natural development of the nose

• The frame must be aesthetically acceptable

The key features that are important for a child's spectacle frame, compared with adult frames, are that they need to have a [2]:

• Larger splay angle
• Larger frontal angle
• Smaller frontal width
• Shorter length of drop
• Lower crest height
• Smaller angle of side
• Shorter length to bend
• Smaller boxed lens size
• Shorter back vertex distance
• Pantoscopic angle of zero

Safety is of primary concern while selecting frames for children [4]. Children are always engaged in acts that are unexpectedly hazardous, and their eyeglasses can be expected to endure much abuse. Children's frames should be strong; solidly built, be they plastic or metal. The lens grooves must be deep so that the lenses are more securely fitted in the frame. We should be careful avoiding nylon cord frames because the thin cord does not hold the lenses in place securely enough for rough handling and tumble play. High quality spring temples are a good option. The advantage is that, when hit from the side, the spring takes much of the shock, instead of transferring all of it to the side of the nose.

Optical center of the lenses and patient'spupillary distance (PD) should be practically equal. For myopes, small lens blank size should be preferred, in order to reduce lens edge thickness and weight. Plastic frames should be considered to help hide any edge thickness, and those with wide sides are particularly recommended for highmyopes to help hide the edge thickness too, as well as making the frame more durable. All hypermetropes should be dispensed with as small a lens blank sizes possible, in order to help reduce the center thickness and weight of the lenses. Plastic frames, e.g., cellulose acetate, can be suitable for children, providing the bridge of the frame is the same shape and width of the patient's bridge. Titanium frames are extremely valuable for those who are allergic to other metal (hypoallergenic material). It is must that the bridge of the frame, in whatever form, fits properly so that the entire weight of the spectacles is not carried by the crest. This may not only be painful, but also can cause a permanent ridge to be formed as it causes adipose tissue to breakdown as the child is still developing. Also, the weight of the spectacles can be evenly distributed over a large area using larger nose pads. Using a strap bridge can increase this area. For babies, toddlers, and patients who have Down's syndrome and, therefore, are likely to have low crest heights, a strap bridge is a good option to obtain an ideal fit. Silicone-based rubber frames are useful for some babies and children who require indestructible frames. The material is such that it is light and pliable and any frames made from this will not have metal hinges, thereby reducing the chances of facial injury.

Frame sides

Young children can be fitted with light metal frames with curl side. A well-fitting curl should sit along the back of the ear and must stop just short of the ear lobe. The curl of the sides should always be covered in silicone or rubber to help durability and comfort. For temples with drop-end sides, the side should be adjusted such that the bend sits at the ear point and the drop should rest along the side of the head. The temple of the frame must not touch the side of the head until reaching the ear-point. For those children who requires hearing aid should be dispensed with straight or drop-end metal sides. Sports bands can be used to keep drop-end sided frames in place and are especially useful should the child need spectacles while playing any sports.

Pediatric lenses

While dispensing children, impact resistance and durability are the most essential characteristics for lenses. This is because children are quite "heavy-handed "with their spectacles. There is also high risk of damage/ loss while playing. Of a secondary importance are the relative thickness, weight and appearance of the lens. Polycarbonate lenses meet these requirements. Not only do polycarbonate lenses have a higher index of refraction but also it has a lower specific gravity, which makes it both thinner and lighter for equivalent prescriptions. A thinner lens means more cosmetically appealing and comfortable eye wear, while a lighter lens helps the child get used to wearing the frames more quickly and easily.

Also, with this combo, both the child and the parents will be happier. Protection against ultraviolet (UV) radiation is another consideration, as this is dangerous to developing eyes and skin. Children lack the intrinsic protection against, which adults have, and so their spectacle lenses should ideally give full UVprotection to at least 380nm.As children's spectacle lenses need replacing quite frequently in many cases, lens extras such as multi-antireflection (MAR)coatings are usually unnecessary apart from a hard coat to increase scratch resistance. The most hazardous thing to pediatric dispensing is prescribing glass lenses. Glass lenses are too dangerous to be dispensed to children, as they are likely to shatter and may invite ocular and facial injuries.

Bifocal Fitting

Children requiring bifocals need additional consideration. Children usually enjoy near world unlike adult's visual world. Child's close focus is centered on larger objects such as shapes and blocks, not the printed word or computer screen, therefore the child should be fit with the largest bifocal segment available. Secondly, because of the child's pupillary distance is smaller than an adult, he will have to use a larger portion of the bifocal segment to look at the same object [2]. The bifocal line should bisect the child's pupil rather than by the bottom eyelashes as in an adult. Measurements regarding bifocal fitting must be precise. Parent's knowledge and education on the design and application of bifocals is very important. Secondly, since parents are usually young and do not have first-hand knowledge of bifocals; it is a good idea to explain how the bifocal segments will alter the appearance of the child's eyes.

Table 1: Use and Avoid while choosing spectacles for pediatrics [5]

USE	AVOID
Sturdy frames	Lightly constructed copies of adult frames
Deeply grooved frame fronts	Frames with shallow grooves
Quality spring temples	Nylon cord frames
High impact lenses such as polycarbonate or Trivex	Any lenses that are not highly impact resistant, especially glass lenses
Sports protection when Applicable	

Conclusion

Here prescribing spectacle is not enough, we should always prescribe spectacle for perfect vision, perfect adjustment, perfect optical results, perfect cosmesis and safety. Dispensing is an art, which is more important in pediatric cases. Hence, learning and dispensing the spectacles in correct way is everyone's responsibility.

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