

Assessing the Needs of Children with Sialorrhea in Relation to Clothing Protectors  
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**Introduction.** Sialorrhea, or drooling, affects many individuals with physical or cognitive disabilities and it can significantly impact quality of life across the lifespan (Anonymous, 2019; Hornibrook & Cochrane, 2012). Individuals with sialorrhea typically wear a bib-like clothing protector to avoid saliva wetting their shirts or remaining on their neck, which can result in skin irritation. Previous research has assessed the clothing needs of children with disabilities (Klerk & Ampousah, 2002; Stokes & Black, 2012). Stokes and Black (2012) interviewed 33 adolescent girls with disabilities, and reported a lack of stylish garments for adolescents with physical disabilities. However, these studies have not assessed users' needs for clothing protectors. The purpose of this research was to identify general needs and users' perception of current clothing protectors for children with sialorrhea. The Functional, Expressive, Aesthetic, Accessibility (FEA2) consumer needs model (Hall & Lobo, 2018) was used, which is an expanded version of the FEA model (Lamb & Kallal, 1992), and helps assess the broader needs of functional apparel of end user. **Methods.** In-person interviews were conducted with six teachers and seven parents to address user needs of nine children (aged 9-21) with sialorrhea (three children had both teachers and parents been interviewed; two children had their teachers been interviewed; four children had their parents been interviewed). It was not possible to interview the children they cared for due to associated cognitive and communicative disabilities. Inclusion criteria were serving as a regular caregiver for a child who regularly uses clothing protectors. The interview questions combined open-ended questions and items rated using a 1-5 Likert scale (higher values more positive). Questions gathered information about medical history related to drooling issues (Reid, Johnson & Reddihough, 2010), and the likes and dislikes of users for their current products across the areas of the FEA2 model (Table 1). Interviews were video recorded for future coding by two independent coders using Microsoft Excel software. Inter-coder agreement was evaluated using the formula  $[\text{Agreed}/(\text{Agreed}+\text{Disagreed})]*100$ . The high agreement percentage (91.3%) allowed analyzing the interview data descriptively (Creswell & Miller, 2000). **Results.** Teachers and parents rated their existing clothing protectors above average for absorption, durability, fabric softness, fit, coverage, self-esteem, fastener, and affordability, suggesting they were satisfied with the function and cost of their current products (Table 1). Many of the clothing protectors were made by volunteers and donated to users at no cost; that's why some participants rated them high for affordability. Participants reported that they found the commercially available clothing protectors to be expensive. Although they rated the current solutions high in terms of method of fastening, participants reported that they preferred snaps over hook and loop fasteners (Velcro). They have used products with Velcro before, and fibers would stick to the Velcro rendering it ineffective after several washes. Teachers and parents

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rated their products low for ease of donning, attractiveness, and patterns available. One teacher mentioned that she would mess the child's long hairstyle when she donned/doffed clothing protectors for the child since the protectors fasten via snaps located at the back of the neck. Participants rated the appearance of their current clothing protectors below average, although those who made their own clothing protectors rated appearance higher since they could choose their desired fabric colors and patterns. Teachers and parents differed in their ratings of comfort, breathability, and color options. Teachers rated these lower than average; meanwhile, parents rated them higher than average. The primary reason for these discrepancies is that children typically used commercial products in school and homemade products in the home. Most of the commercial products do not have a lot of color options and use thick materials to prevent leaking. In contrast, homemade options incorporate self-selected fabrics, colors, and patterns.

**Table 1.** Caregivers' ratings of their current clothing protectors.

FEA2 Classification	Variable	Teacher Ratings		Parent Ratings	
		<i>N</i> *	<i>M</i> ± <i>SD</i>	<i>N</i> *	<i>M</i> ± <i>SD</i>
Functional	Absorption	4	3.5 ± 0.5	7	3.7 ± 1.2
	Comfort	3	2.7 ± 0.5	7	4.3 ± 0.7
	Durability	6	4.5 ± 0.8	7	4.6 ± 0.5
	Fabric-softness	4	3.8 ± 1.3	5	3.8 ± 1
	Fabric-breathability	3	2.7 ± 0.9	7	4.1 ± 0.6
	Clasping	1	5 ± 0	6	4.3 ± 0.9
	Ease of donning	6	1 ± 0	7	1 ± 0
Expressive	Sizing-fit	4	3 ± 1.2	6	4 ± 1.2
	Sizing-cover	2	3.5 ± 1.5	7	3.4 ± 1.3
	Self-esteem	4	3.3 ± 1.5	7	4.1 ± 0.8
Aesthetic	Attractiveness	4	2.3 ± 1.6	7	2.4 ± 1.4
	Color Selection	4	2.8 ± 1.5	7	3.3 ± 1.7
	Pattern Selection	3	2 ± 0.8	6	2.8 ± 1.7
Accessibility	Affordability	2	4 ± 1	6	5 ± 0

\*Number of participants contributing data for each outcome differed because participants sometimes reported they were unsure of their answer. \*\* Rating scale: 1 = completely unsatisfied; 3 = average; 5 = fully satisfied.

**Conclusions.** Results showed that teachers and parents caregiving for children with sialorrhea have some needs that are met and others that are not met by the existing clothing protectors. They are generally satisfied with the function and affordability of their existing solutions, although affordability becomes more of a concern for users who have less access to homemade, donated solutions, and need to turn to commercial products. Needs are not sufficiently met in terms of appearance of the current products, especially related to color and pattern choices. Furthermore, breathability and comfort are concerns for using commercial products. These results highlight the need for commercial clothing protectors that incorporate textiles with greater color and pattern options and improved breathability. As many caregivers and volunteer community members are fabricating clothing protectors, there is also a need to support these individuals by sharing information about which textiles, patterns, fasteners, and designs best meet the needs of end users. However, further studies should be done using larger sample population

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