

Designing and evaluation of functional pants for lower limb amputated children

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ABSTRACT

Clothing is one of the most personal component of daily life. Physical disability affects the type of clothing that can be worn. For handicapped, dressing is a very difficult and often impossible task. Thus, there is a great need to design clothing for handicapped and disabled. Respondents faced clothing problem *i.e.* frequent wear and tear of the garments at armpit level, donning and doffing of the garments, problem with fasteners, bunching of garment at under armpit due to crutches and raising of upper garments. The identified clothing problems were incorporated in pant designs for lower limb amputated and were given to five randomly selected respondents for wear trial. Developed pant designs were found highly suitable and acceptable by lower limb amputated respondents and their mothers.

Key words : Functional clothing, Physical disability

Clothing is one of the basic necessities of human life. Clothing has been recognized, as a primary need of mankind throughout the world. Clothes render on individual identity. Clothing is a form of nonverbal communication. Clothing tells something about the person wearing it. The social and psychological aspects for the physically handicapped are especially important. Improved appearance increases self-confidence and helps one to gain social acceptance. Clothing carefully selected for its design, color and fabric can be used to enhance to individuality and to minimize the appearance of the deformity. Specially designed clothing for handicaps encourage independence, self-reliance and promote adjustment to disability. (Hallenback, 1966)

The children with physically handicapped face a number of problems while performing their daily activities thus use support of crutches, guards, spints, callipers and requirements. Parents play an important role in rehabilitating these children. These clothing problems may be minimized by designing suitable garments for the needy as well as to supplement their personality. The objectives are as to study the clothing problems encountered by children with lower limb amputated, to design and construct suitable functional garments and to find out the acceptability and suitability of designed functional garments

METHODOLOGY

The present study was conducted on lower limb amputated children at Narayan Sewa Sansthan of Udaipur city. This research was based on a descriptive cum experimental design *i.e.* designing and evaluation of functional garment for lower limb amputated. A total 30

respondents were selected randomly for experimentation. Pretested structured interview schedule was used for getting the complete and desired information. Ten sketches of functional pants were designed. A five point rating performa was used to evaluate functional pants designs with the help of five occupational therapist and five clothing and textile experts. These three pant designs were constructed according to individual body measurements of the respondent by the researcher and were given to randomly selected five respondents for a wear trial for three consecutive days. A three point rating scale was used for assessment of suitability and acceptability of functional pants. The frequency, percentage, weighted mean score and acceptability scores was calculated to analyse the data.

RESULTS AND DISCUSSION

The following section contains the outcome of the major observation made during the study. The findings of the present study are discussed here below:

Clothing problems lower limb amputated:

To find out clothing problems encountered by lower limb amputated children possible problems were enlisted and their responses were obtained as shown in Table 1.

The above table shows that the 60 per cent of respondents faced clothing problem of frequent wear and tear of garment at armpit level.

The half of the respondents faced problem with donning of the garments, doffing of the garment and with fasteners. 26.66 per cent respondents were having problem with bunching at under armpit due to crutches.

Table 1: Frequency and percentage distribution of respondents by type of clothing problem faced

Sr. No.	Problems	Respondents (n=30)	
		F	%
1.	Donning of the garments	3	10.00
2.	Doffing of the garments	3	10.00
3.	Problem with fasteners	2	6.66
4.	Frequent wear and tear of the garments at armpit level	18	60.00
5.	Bunching of garment at under armpit	8	26.66
6.	Raising of upper garments	4	13.33
7.	Ist and IInd	15	23.33
8.	Ist, IInd and IIIrd	7	50.00

23.33 per cent respondents faced problem of donning of the garments and doffing of the garments. Few respondents (13.33%) faced problem of raising of upper garment. Remaining respondents 10 per cent were having problem with donning of the garments and an equal number faced problem with doffing of the garment and only 6.66 per cent were having problem with fasteners.

The specifications of three selected pant designs by occupational therapist and clothing and textiles experts are as follows.

These three pants were constructed by the researcher using standard construction techniques.

Assessment of suitability and acceptability of functional garments:

These three constructed pants were given to the respective five respondents for a period of three consecutive days for wear trial to find out their suitability and acceptability.

In order to assess the suitability and acceptability of constructed pants, a rating performa was developed based on three points rating scale and was given to respondents and their mothers.

The responses derived for each pants were coded and presented in following table. The table depicts the weighted mean score of design pants.

For ease of dressing and undressing and to change the lower garment conveniently. Pants were made with special plackets. Suitability score (Table 2) revealed that in pant design no.1- placket on both side made dressing/undressing very easy and outer seam from waist to hip length placket set very easily and zip closure were assessed to be most comfortable and highly suitable. Above overall constructional feature were found 2.8 WMS.

Pant with elastic at back and belt at front was

Table 2 : Assessment of suitability of functional garment on the basis of Constructional features

Pant design no.	Constructional features	Suitability WMS
1.	a) Placket on both side outer seam from waist to hip length fastened with zip closure	2.8***
	b) Elastic at back and belt at front fastened with large buttons	3.0***
	c) Fly fastened with velcro tape	1.8*
2.	a) Fully elasticated waist band	2.4**
	b) Boot cut with side seam zipper opening at outer leg	2.8***
	c) All round belt at front fastened with velcro tape	2.2**
3.	b) Patch pockets on front	2.8***
	c) One side below knee length	3.0***
	d) Elasticated shoulder straps with velcro fasteners	2.4**

2.35-3.0*** = Highly suitable 1.67-2.35** = Suitable
1.0 – 1.67* = Least suitable

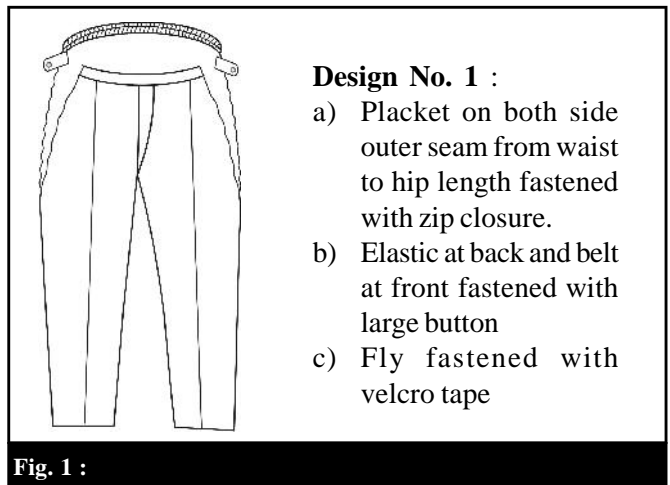
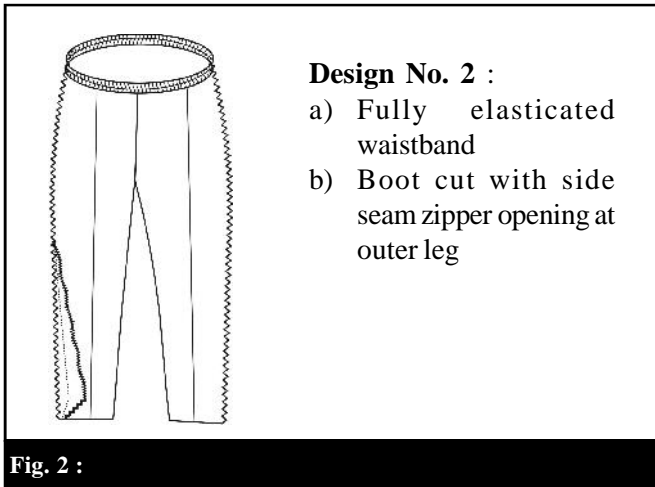


Fig. 1 :

assessed to be highly suitable and found that 3.0 WMS. Elastic at back and belt at front provided more ease and comfort to the respondents while putting on and taking off the garment. Large buttons used in the waist belt were found highly suitable. These over all constructional feature were found 3.0 WMS. Velcro tape used in the fly were found least suitable for children. It was found 1.8 WMS, because of ease of unfastening.

Pant design no. 2- with fully elasticated waist band due to its suitability for easily setting at waist, easy to slip the leg through. It was found 2.0 WMS. Pant boot cut with side seam zipper opening was found highly suitable for frequent wear and tear of lower garments. It was



found 2.8 WMS.

Pant design no.3- all round belt with velcro tape were assessed more suitable for easily manipulation of the fasteners. It was found 2.2 WMS. Patch pockets on front were highly comfortable and found that 2.8 WMS. One side below knee length were highly suitable and for amputees and found 3.0 WMS. Elasticated shoulder straps with fasteners for support for pant. It was found that 2.4WMS.

The material and colour were selected for functional lower garment on the basis of choice of respondents.

Acceptability index of functional pant designs:

This was calculated on three point rating scale with the score of 3, 2,1for acceptable, least acceptable and not acceptable. Scores obtained by functional pant design for each parameter is shown in Table 3.

Researcher was curious to find out which design got maximum score, it was interesting to record that design no. 1,2,3 got 1st, 2nd and 3rd ranks with the scores of 72, 75, 83, respectively out of 90 scores.

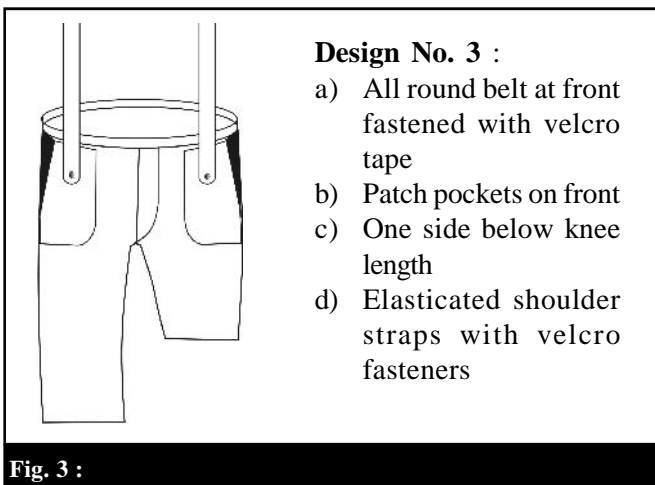


Table 3 : Acceptability index of functional pants

Sr. No.	Parameters of functional lower garments	Scores		
		Design no.-1	Design no.-2	Design no.-3
1.	Easily donning and doffing of the garments	12	15	12
2.	Easily opening with fasteners	13	14	11
3.	Functional features	12	13	12
4.	Comfortable	13	14	13
5.	Aesthetic appeal	12	13	11
6.	Over all appearance	13	14	13
	Total scores obtained	75	83	72
	Acceptability Index	83.33%	92.22%	80%

Puri and Bhai (1971) reported that most preferred features in the garments were self-help features, attractiveness, suitability and comfort to meet the needs of the children and to develop independence in them while dressing and undressing.

Conclusion:

The present study was conducted on designing and evaluation of functional pants for lower limb amputated children. Respondents faced clothing problem with present clothing. Three functional pants were designed and the identified clothing problems were incorporated in pant design for lower limb amputated. Developed pant design were found highly suitable and acceptable by lower limb amputated respondents and their mothers.

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