

# Designing and Construction of Functional Garments for Girls with Lower Limb Disability



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## Abstract

This study was designed to examine the clothing related problems of lower limb disabled children. The study was carried out in two phase, i.e., survey method and experimental procedure. For survey method the sample comprised of 120 children of the age group of 6-14 year affected with divergent physical limitations. Total 44 children were affected with poliomyelitis and 29 children were affected with nerve injury and 24 with cerebral palsy, 15 children were affected with muscular dystrophy and 8 with spina bifida. The execution of the data collected was mainly to find out the authentic information about preference for type of fabric, type of garments, placket opening and fasteners for lower limb disabled children. In the second part of the study, design of the garments were developed and constructed. Total 30 designs were developed considering the preferences give by the mothers and care takers. Prepared designs were subjected to visual evaluation for the selection of 10 best designs from total 30 designs. These specially designed and constructed garments were given to lower limb disabled children for wear trials. After wear trials the opinion and suggestion given by the mother and care takers were reviewed.

**Keywords:** Functional Garments, Lower Limb Disability, Garment Construction, Wear Trial.

## Introduction

All people have basic human needs. Meeting these needs provides satisfaction and enjoyment in life. Clothing helps to meet some of these needs. Knowing something about the role of clothing helps to understand you and others better. Clothing is a complex but fascinating part of everyone's life. Clothing is an essential part of appearance, and with the choice of clothing people show a part of personality. They generally prefer different types of clothing for different types of activities (leisure, work, parties, etc.). Properly designed clothing can act as a camouflage, hiding possible disabilities.

Clothing provides opportunity to the child to develop a sense of anatomy and competence. It communicates impression of the self to others in the social environment. Keeping up with clothes for growing children is a challenge to all parents and care givers. Clothing is considered as an important factor, which has great impact on physical and psychological and social development of any child. Proper clothing not only enhances growth and development of a child but also gives pleasure and self-confidence thus making childhood a delightful period.

Attention is being focused on normal children's clothing as they are easily available in the local market with wider range of sizes and latest styles but no attention is being paid to clothing of the special group as they are totally dependent on their mothers as far as clothing is concerned. In other words the special group shall be considered as one, whose clothing requirement is different from an average or normal group.

The children with special needs face a number of problems while performing their daily activities, thus use support of crutches, guards, calipers and wheel chair according to the severity 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.

Special clothing designed with self-help features encourages the child to dress and undress himself or herself, thus making him or her independent that in turn builds self confidence. Such clothes can be made attractive and fashionable contributing to physical, psychological and emotional feeling of children. (Vanishree and Naik, 2005).

Variations in body form often make it difficult for people with limb disabilities to dress well, which in turn strengthen their aspiration for beauty. Their clothing design must not only meet functional requirements, but also should beautify body shape and enhance self-confidence. Research demonstrates that people with limb disabilities have a greater requirement for aesthetic consideration in apparel design than the non-disabled. Their social experience creates a thirst for a fashionable and unprejudiced appearance.

### Aims of the Study

1. To find out clothing related problems and preferences of children with lower limb disability
2. To design and construct functional garments for children with lower limb disability
3. To assess the acceptability of the constructed garments and determine their cost.

### Materials and Methods

#### Selection of Locale of the Study

Udaipur district of Rajasthan was selected to conduct the present study. The area was selected purposively due to the easy approachability and familiarity of the researcher with area. Data was collected from the following institute.

1. Narayan Seva Sansthan, Udaipur, Rajasthan

#### Size of the Sample

A purposive sampling technique was adopted to select the respondents. A sample of 120 children (6-14 years) with lower limb disabilities was selected for the study. Out of 120 children, 10 children were selected for final evaluation of the constructed garments. The contact numbers of their parents were taken to contact them at the time of evaluation.

#### Technique of Data Collection

The present study was a need based study; therefore initially a baseline study was conducted to check the need to develop garments for lower limbs disabled children's. This was done by observing the affected children and personally talking to the children, care takers and occupational therapists in institutions. Once a need for such a study was established, a field study was planned to understand the problems faced by the lower limb disabled children and their care takers during the process of dressing and undressing.

The interview schedule was formulated to elicit the information about general and specific information. Interview schedule was prepared to collect the information regarding existing clothing practices and their clothing requirements. The interview schedule was categorized into the following two parts:

#### Part –a

The first part of interview scheduled pertained to the collection of background information of the respondents and their family like age, sex, caste, size of the family, family income etc.

#### Part –b

This part deal with the specific information regarding existing clothing practices of lower limb disabled children. This included problems and preference regarding clothing practices such as problems in dressing and undressing, reason due to which clothes get damaged, type of garments worn by respondents, preferences in fabric, texture, color,

print, type of placket opening, fasteners used in garments and type of decorative features etc.

### Developing Designs of Functional Garments for Lower Limbs Disabled Children

The designs of garment were developed keeping in view the lower limb disability of the selected children and the information supplied by the children and their mothers, care takers and occupational therapist regarding the clothing requirement. Designing was done keeping in view the prosthesis and orthotic devices they used.

#### Evaluation of the Developed Designs

15 designs were prepared for girls. Prepared designs were subjected to visual evaluation for the selection of 5 best designs from total 15 designs.

#### Stitching of Garments

The stitching lines from the adapted basic blocks were transferred to fabric. Finally, the fabric was cut and stitched into garments according to the need and preference of mothers & care takers of the disabled children.

### Assessment of Acceptability of the Constructed Garments

Prepared garments were evaluated to find out the acceptability of the products.

Same panel of 30 judges were taken for the evaluation. The evaluation was done by using an evaluation Performa. The factors that were considered for evaluation were comfort, functionality, durability, cost effectiveness and overall appearance. All prepared garments were ranked according to their preferences obtained. Five point scale was used for evaluation of the constructed garments and marks 1,2,3,4 and 5 was assigned for poor, fair, good, very good and excellent respectively.

#### Cost Calculation

The cost of the each garment was calculated on the basis of raw material cost, fasteners and trimming cost and stitching charges.

#### Statistical Analysis

The data obtained from the interview schedule was coded, tabulated and presented through bar diagram. From the tabulated data simple percentages were worked out to know the background information. For existing clothing practices, problems and preference of respondents for their lower limb disabled children, weighted score were calculated for each attribute and then ranked out.

### Results and Discussion

#### Results of Survey

All the children selected for the study were affected by lower limb disability. The background information of the respondents included in this study was age, sex, size of family, annual family income of the respondents. Approximately half of the respondents 48.3 per cent belonged to age group of 11 to 14 years. Most of the respondents lived in nuclear family and their annual income was above ₹ 50,000. Most of respondents 36.66 per cent suffered from poliomyelitis and 24.16 per cent of the children suffered from nerve injury. In the category of cerebral palsy 20 per cent of the children suffered from this disability and minimum number of the children 12.50 per cent and 6.66 per cent of the children suffered from both muscular dystrophy and spina bifida

conditions. More than half 62.50 per cent children were disabled due to accident, 30.83 per cent were disabled due to prenatal problem and only 6.66 per cent of them disabled due to heredity problem. Majority of children (34.16 per cent) used leg braces. It was observed that 86.66 per cent respondents were not aware about specially designed dresses. Only few 13.33 per cent respondents were aware about specially designed dresses. It was also observed that 90 per cent respondents were wishing to wear their children's specially design garments. About 60.83 per cent respondents highly preferred wrap around skirt with strings in the girl's garments and wrap around skirt with fastener was the least preferred garments for the girl child. Majority of the mothers always preferred ready-made garments followed by tailor-made. Least preference was given for home-made garments. Respondents considered colour combination to be an important factor in appearance and considered soft and pliable as an important aspects in comfort. Majority of the respondent considered strength as an important factor in durability and considered types of material as an important factor in price. On the basis of results obtained regarding needs and preferences of respondents for their children, total 15 designs were developed. All the developed designs were visually evaluated by thirty judges for the selection of the 5 best designs. Total 5 garments were constructed incorporating the functional features desired by the respondents for their children. Keeping in view the factors like ease in putting on and taking off, ease in manipulating fasteners, fit of the garment, comfortability, and appropriate of the designs the garments were made for the lower limb disabled children. After wear trials highly Per cent of the mothers and care takers expressed that all the specially designed garments were functional, could be used as outer as well as casual wears and differed from normal garments with respect to constructional details. All the respondents reported that these newly designed functional garments were very comfortable and special features incorporated in them are highly functional. Among five girls garment the mothers gave first preference to front side zipper opening skirt as it can be opened easily whereas Wrap round skirt with strings got second preference which was helpful to lower limb disabled girl due to their functionality. Skirt with front button opening was got rank fifth because it was little bit difficult in putting on and taking off due to functionality of it.

#### Developed Designs for Girl's Garments

On the basis of results obtained regarding needs and preferences of respondents for their children, total 15 designs were developed. All the developed designs were visually evaluated by thirty judges for the selection of 5 best designs from total 30 designs. The evaluation was done by the panel of 30 judges including 10 staff members and 10 students of Ethelind School of Home-Science and 10 boutiques. All designs got ranked according to their preferences obtained. Five point scale was used for evaluation of the developed designs and marks 1,2,3,4 and 5 were assign for poor, fair, good, very good and excellent respectively.

Table-1

#### Evaluation of the Designs

S. No	Designs for Girls Garments	Average Score	Rank
1	Front side zipper opening skirt	18.53	I*
2	Skirt with side Velcro opening	16.86	
3	Skirt with front button opening	18.13	II
4	Gathered pyjama	15.40	
5	Pleated afghani pyjama	15.13	
6	Wrap around skirt with fasteners	17.26	IV
7	Flap skirt with piping	15.40	
8	Flap skirt with frill	16.23	
9	Folded Capri with side zipper	16.80	
10	Capri with elastic	15.70	
11	Capri with zipper at side	14.43	
12	Wrap around skirt with strings	17.76	III
13	Wrap around with pocket	14.86	
14	Trouser with Velcro at outer leg	16.70	
15	Trouser with yoke	17.06	V

#### Constructed Garments

Total 5 garments were constructed incorporating the functional features desired by the respondents for their children and then tried functional features desired by the respondents for their children and then tried by the children. The garments were given to the caretaker to be worn by children. The children's mother and care taker did assessment of the stitched garments. The factors that were considered for evaluation were comfort, functionality, durability and overall appearance, the evaluation was done by using an evaluation proforma.

Table 2

#### Evaluation of the Constructed Garments

S. No.	Girls garments	Average Score	Rank
Garment -1	Front side zipper opening skirt	22.53	I*
Garment -2	Skirt with front button opening	21.53	V
Garment -3	Wrap around skirt with fastener	23.16	IV
Garment -4	Wrap around skirt with strings	23.30	II
Garment -5	Trouser with yoke	21.93	III

#### Cost Calculation

Cost for each garment was calculated by adding the cost of raw material, fasteners and stitching charges and other essential items. All the Garments were cost effective and ranged between ₹ 228- 464.

#### Conclusion

It is concluded from the study that children with lower limb disabilities were facing problems in dressing and undressing with regards to their existing garments. The results of the wear trials revealed that among five girls garment the mothers gave first preference to front side zipper opening skirt as it can be opened easily whereas wrap around skirt with strings got second preference which was helpful to lower limb disabled girl due to it functionality. The redesigned and constructed garments help to make the process of dressing and undressing less tedious for both the disabled children and their care takers.

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## Constructed Garments



Plate 1 Skirt with Front Side Zipper Opening



Plate 2 Skirt with Front Button Opening



Plate 3 Wrap Around Skirt with Fastener



Plate 4 Wrap Around Skirt with Strings



Plate 5 Trouser with Yoke

**Wera Trial of Constructed Garments**



**Plate 1 Skirt with front Side Zipper Opening**



**Plate 2 Skirt with front Button Opening**



**Plate 3 Wrap around Skirt with Fastener**



**Plate 4 Wrap Around Skirt with Strings**



**Plate 4.15 Trouser with Yoke**