

## A Study on the Clothing and Purchase Behavior for the Handicapped

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### Abstract

*The goal of this study is to investigate the current conditions of apparels for the handicapped, identify the problems and recommend what are appropriate and functional apparels for the handicapped. The research method was to statistically process a survey on 200 handicapped by frequency analysis and cross tabulations. The study results are as follows. First, the degree of discomfort in daily activities was shown during toilet use and eating. Among clothes categories owned by the handicapped, most discomfort was felt in the order of everyday clothes, workout clothes, underwear, athletic shoes and working clothes. Second, children's clothing was most commonly preferred clothing style by handicap for the dwarfism. Comfortable clothes was preferred and relaxed, decent, and unique styles were preferred in the order. Soft feeling texture and absorbency was considered important as preferred clothing material. Third, sizes and designs were improvements wanted by the handicapped in apparel in the order. In addition, they wanted to wear apparel sensitive to the fashion just like the non-handicapped without showing the handicapped parts. There is a necessity for the government or municipalities to establish and run protected workplaces or independent workplaces for those who have studied apparel. The field is thought to require continuous and numerous follow-up studies such as researches on different physiques, standardization of apparel, segmentation of sizes and methods of producing custom apparel by function and handicap.*

*Key words : handicapped people, apparel life, difficulty of wearing apparels, favorite apparel, solutions of apparel.*

### I. Preface

#### 1. Research Necessity and Goal

Comparing apparels of the non-handicapped and the handicapped, the difference is that special requirements are imposed on the apparel of the handicapped depending on the degree or areas of handicap while the desire is identical to that of the non-handicapped. Apparels fitting one's own physique were made when personal custom tailors were thriving. However, it is very difficult task to

produce apparels capable of satisfying the handicapped with each unique physique and requirements in the standardized mass production system in the modern days.

The researches on the apparels for the handicapped show that it is easy for them to be valued as worthless handicapped people due to the external physical abnormality and it gives them huge frustrations beyond the physical handicap. Therefore, when the handicapped can minimize their weaknesses by making favorable impressions with attractive clothes in the career and social

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life, it is thought that they will be accepted as human beings and not worthless subjects, their potentials will be well assessed and furthermore raise their social identities.

It is difficult constantly to provide assistance to a single handicapped person to dress up in the busy modern life. Therefore it is necessary to develop apparel designs which enable the handicapped to take care of themselves without others' assistance. It is thought that specialty shops producing highly functional apparels, shops capable of altering to fit the handicap or handicap accessible special apparel specialty stores are necessary for the handicapped.

Therefore, the goal of this study is to investigate the current conditions of apparels for the handicapped, identify the problems, and suggest what are appropriate and functional apparels for the handicapped and convenient purchase methods when purchasing apparels.

The significance is to suggest effective clothes purchasing methods to low-income handicapped people based on;

First, investigate the current conditions and shapes of apparels for the handicapped

Second, investigate problems during purchasing and wearing the apparels and

Third, investigate and suggest their preferred materials and designs

The research methods were to research the apparels of the handicapped through theoretical backgrounds and literature reviews. In addition, a survey was conducted on the handicapped in occupational training on apparel conditions, preferences during purchases and suggestions regarding apparels for the handicapped and was statistically processed by frequency analysis and cross tabulations.

## II. Literature Review

### 1. General Considerations on the Handicapped

According to the definitions in the section 2 of the Welfare of Disabled Persons Act, a handicap is a condition limiting or obstructing the completion of a normal individual task by an impairment or a disability of mind or body and an impairment is a loss or an abnormality in the physical or anatomical structure or function and a disability is a condition limiting or causing deficiency in the capability of normal activities by deficiency in mind or body.

Characteristics of the handicapped can be studied in the physical development aspect and the mental development aspect.

B. J. Ahn (1978) pointed out that the individual differences are huge in the development of physique or build of the handicapped.<sup>1)</sup> In the research by J. K. Kwak (1981) on the physical development of handicapped children (male and female children between ages of 8 and 16 in special education schools for the handicapped in Seoul and Daegu area were researched), height, weight, chest circumference and sitting height were compared with non-handicapped children by gender and age and the results showed that the handicapped children showed a similar development in the chest circumference, slower developments in the height, weight and sitting height and a significantly slower development in the height than the non-handicapped children. Physical developments fall behind in the height, sitting height and weight in the both genders except for the chest circumference compared to the non-handicapped children due to the secondary cause of lack of exercise and nutritional problems.<sup>2)</sup>

In the mental development aspect, Shakespeare (1982) stated that it is difficult for handicapped children to acquire the notion of ego in the first place even if they have normal intelligence as the developments of sensory organs are slow and the development of the senses through the physical figure includes looking at an ideal and desirable life and the actual physique of themselves and

1) Byung-Jub Ahn, *Educational Research on Physically Handicapped Children* (HanSa University Press, 1978).

2) Jun-ki Kwak and Ki-Young Kim, "Characteristics of Physique Development in Retarded Children," *Samyook Children Rehabilitation Center Press Vol.7* (Seoul: Samyook Rehabilitation School, 1981), pp.30-37.

handicapped children have trends to conceive the non-handicapped children to be perfect and may feel that an ideal physique is very different from their own, resulting in a mentally maladjusted condition if the misalignment between the two increases.

S. T. Kim (1979) stated that handicapped children happy and lively during youth feel depression and unhappiness deeply in their adolescences and the development of sociality of handicapped adolescents is significant in the stages of personality formation as most adolescents assess and judge themselves by others' responses.<sup>3)</sup>

## 2. Research on Apparel Styles of Handicapped

The first research on the apparels of handicapped was a research on special clothes for handicapped children by Sherron A Williams of the United States in 1930's. It did not begin as researches by expert designers but was usually conducted by special education experts or rehabilitation physicians with the goal of alleviating the dressing and undressing movements by the handicapped.

Prior studies to complement the apparels for the handicapped by scholars like Phelps, Hopkins and Cousins (1958) stated that it is important for handicapped to train themselves to dress themselves and choose clothes easy to take off.<sup>4)</sup>

Examples of physical conditions making the functional requirements of dressing and undressing of the apparels for the handicapped are insufficient arm strength, limited use of hands, paralyzes and deformations. Solutions for this are; it is easier to have front opening or pullover-type side opening or back opening, zippers or buttons are easily handled components but strings or ribbons are difficult (Boettke, 1963)<sup>5)</sup> and overall elastic bands are convenient for pants. In addition, important factors related to satisfying the de-

mands for the apparels for the handicapped are colors, designs, fashion trends, fits, comfort, price and etc.

## III. Study Method and Procedure

### 1. Research Topics

1. Research clothing behaviors and characteristics of the handicapped
2. Research clothing purchase behaviors of the handicapped
3. Research clothing designs (style, size, material, patterns) and preferences of the handicapped
4. Research clothing improvements of the handicapped and differences between the genders

### 2. Research Subjects and Data Collection

This research is about the clothing and purchase behaviors of the handicapped and utilized a survey method to study problems the handicapped feel in their apparels, apparel design preferences, apparel purchase behaviors and improvements on the apparels of the handicapped.

For the study subjects, 296 questionnaires were distributed to total of 330 trainees at three agencies; 200 trainees at Ilsan vocational school of Korea Employment Promotion Agency for the Disabled, 60 trainees at the National Rehabilitation Center and 70 trainees at Samyook Vocational School. 250 questionnaires were retrieved and 200 of them were used for the analysis after excluding 50 questionnaires that were either unclear in the response or inappropriate in the expression of opinions.

### 3. Measurement Tools and Analysis Methods

To conduct the goal of the research, the questionnaires were created by using the measurement concepts used in the prior researches (S.H. Kim,

3) Sung-Tae Kim, *Developmental Psychology* (Seoul: Bobmunsa, 1979).

4) A. M. Phelps, T. W. Hopkins and R. Cousins. *The Cerebral-Palsied Child. A Guide for Parents* (New York: Simon & Schuster Inc., 1958).

5) E. M. Boettke, "Clothing for Children with Physical Handicap," *Journal of Home Economics* Vol.155 No.8 (1963), pp.639-640.

1991<sup>6)</sup>; C.H. Bae, 1985<sup>7)</sup>; J.S. Shin, 1999<sup>8)</sup>; J. W. Lee, 1990<sup>9)</sup>). Total 296 questionnaires were distributed and 250 were retrieved. Retrieval ratio is 84.5% and 200 of them are used for the analysis after excluding 50 questionnaires that are either unclear in the response or inappropriate in the expression of opinions.

Frequency analyses were conducted on all research factors and cross tabulations were conducted on the current conditions of apparel purchase and the preferred apparel styles using Excel program as the analysis tool.

## IV. Research Results and Discussion

### 1. Demographic Characteristics

Male handicapped were majority of 200 total research subjects, 149 (74.5%) being male and 51 (25.5%) being female. People in their 20's were most common, below 20 being 16%, 20's 59.5%, 30's 20% and 40's 4.5%. Lower class was the main stream of the economical level perceived by the research subjects, upper class being 2%, middle class 48% and lower class 49%. In education level, high school graduates were most common with 60.6%, middle school graduates were 19% and associates degree and above were 11.1%.

### 2. Handicap Characteristics

The numbers of people by handicap were cerebral palsy 26%, spinal disability 16%, amputation disability 9.5% and dwarfism disability 3% and other categories were high at 25.5%.

23% of the causes of the handicaps were congenital and acquired was high at 77%. Categories of the acquired disabilities show discases at 33.5

%, traffic accidents at 26%, others at 12%, industrial incidents at 4.5% and drug addiction at 1%.

## 3. Problems in Clothing by Handicap Factors

### 1) Problems in Daily Activities

Eight questions related to clothing were reviewed and processed such as dressing and undressing, while in clothes and altering clothes to fit themselves. <Table 1> shows the degrees of difficulties shown in the daily activities when the subjects were being dressed.

The survey of problems in daily clothing in daily activities of the handicapped showed that 18% felt difficulties in dressing and undressing during using toilet and 66.5% did not feel difficulties. 11% felt difficulties from clothes getting dirty often during eating and 70% did not feel difficulties.

### 2) Categories of Uncomfortable Clothes

As seen on the <Table 2>, the most uncomfortable clothes from clothes worn by themselves were everyday clothes 46%, exercise clothes 10%, underwear 8%, exercise shoes 7.5% and work clothes 6%. Complaints on exercise shoes (shoes) or dress shoes due to deformities in the legs or feet were unexpectedly frequent as there were cases where the structures of right and left legs and feet were different in sizes due to the handicap.

Men and women showed little differences, men showing everyday clothes, exercise clothes, underwear, exercise shoes and work clothes in the order and women showing everyday clothes, exercise clothes, underwear, townwear, exercise

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- 6) Son-Hee Kim, "Study on the Physique and Clothing of Physically Handicapped Person: for Men using a Supporting Parasite" (Master's Thesis Graduate School of Ewha Womans University, 1991).
  - 7) Chang-Yeon Bae, "Study of Clothing for the Physical Handicapped: Wheelchair Users in Adolescence as the Subject" (Master's Thesis Graduate School of Ewha Womans University, 1985).
  - 8) Jung-Sook Shin, In-Kyung Kim and Jeong-Wook Choi, "An Analysis of Condition on Clothing of Disability," *The Research Journal of the Costume Culture* Vol.7 No.2 (1999), pp.304-314.
  - 9) Jin-Wha Lee, "Study on Development of Clothing for Women Confined to Wheelchairs" (Master's Thesis Graduate School of Seoul University, 1990).

**〈Table 1〉** Problems in Clothing in Daily Activities

Degree of Difficulty	Problems in Clothing(%)				
	Clothing after Toilet	Contamination of Clothes during Eating	Opening and Closing of Clothes	Damage of Clothes	Alternation of Clothes
Very Difficult	7( 3.5)	4( 2.0)	4( 2.0)	4( 2.0)	12( 6.0)
Difficult	29( 14.5)	18( 9.0)	31( 15.5)	35( 17.5)	30( 15.0)
Average	31( 15.5)	38( 19.0)	31( 15.5)	35( 17.5)	45( 22.5)
Not Difficult	41( 20.5)	53( 26.5)	50( 25.0)	50( 25.0)	48( 24.0)
Not at All Difficult	92( 46.9)	87( 43.5)	76( 38.0)	76( 38.0)	65( 32.5)
Total(%)	200(100.0)	200(100.0)	200(100.0)	200(100.0)	200(100.0)

**〈Table 2〉** Categories of Uncomfortable Clothes

	Male	Female	Frequency (%)
Townwear		1( 2.0)	1( 0.5)
Everyday Clothes	63(42.2)	29(56.9)	92( 46.0)
Underwear	13( 8.7)	3( 5.9)	16( 8.0)
Work Clothes	11( 7.3)	1( 2.0)	12( 6.0)
Exercise Clothes	15(10.0)	5( 9.8)	20( 10.0)
Exercise Shoes	14( 8.3)	1( 2.0)	15( 7.5)
Others	24(16.1)	8(15.7)	32( 16.0)
No Response	9( 6.0)	3( 5.9)	12( 6.0)
Total(%)	149(74.5)	51(25.5)	200(100.0)

shoes and work clothes in the order.

#### 4. Preferred Apparel Style by the Handicapped

##### 1) Style

It is studied what styles the research subjects liked.

As seen on the 〈Table 3〉, uniqueness was important mostly in the teen age group, the twenties showed an even distribution from latest fashion to decent style, late twenties to late thirties preferred a relaxed style and late thirties to fifties showed remarkably high numbers in mostly relaxed style and decent style and unique style was not preferred.

Preferred apparel styles were relaxed and decent styles. This is because the clothes can cover up handicapped areas and be worn comfortably. The

result showed decent style 16%, sexy style 15%, unique style 13.5% and tight style 9.5%. Small number preferred hip-hop style (0.5%). Preferred styles and the differences were analyzed by age groups and the result is shown as following. All age groups evenly preferred the relaxed style.

##### 2) Size

Most survey subjects were shown to purchase and wear ready-made clothes. It is studied what aspects were considered in purchasing ready-made clothes. It is studied how it is different from the non-handicapped in purchasing clothes to fit one's physique and size. It is also studied what differences female subjects and male subjects show. Firstly, the following 〈Table 4〉 shows the sizes of the male and female subjects.

As seen on the 〈Table 4〉, 67% of the dwarfism respondents wear children's clothes and 33% wear size 44, the smallest size in women's sizes. Poliomyelitis shows an even distribution, size 77 is most frequent in cerebral palsy and size 66 is worn most frequently by the spinal handicapped. Female survey subjects wear size 66 in average the most and the dwarfism handicapped have the biggest issue in wearing ready-made clothes.

In the male subjects, size 90, the smallest size not counting children's clothes is worn by 10% of cerebral palsy and 16.7% of dwarfism, which is in overall average only 2.7%. Average physique of sizes 95 and 100 accounts for 67.8%, the majority and large sizes also account for 24.2%.

〈Table 3〉 Preferred Apparel Style by Age

Age	16-20	21-25	26-30	31-35	36-40	41-45	46-51	Total(%)
Preferred Style								
Tight	2( 6.3)	9(15.0)	5( 8.5)	2( 5.9)	1(16.7)			19( 9.5)
Relaxed	17(53.1)	25(41.7)	42(71.2)	25(73.5)	3(50.0)	2(50.0)	3(60.0)	117(58.5)
Unique	10(31.3)	11(18.3)	3( 5.1)	3( 8.9)				27(13.5)
Sexy		3( 5.0)						3( 1.5)
Decent	3( 9.4)	11(18.3)	9(15.3)	4(11.8)	2(33.3)	2(50.0)	2(40.0)	32(16.0)
Hip Hop		1( 1.7)						1( 0.5)
Total(%)	32(16.0)	60(30.0)	59(29.5)	34(17.0)	6( 3.0)	4( 2.0)	5( 2.5)	200

〈Table 4〉 Sizes of the Male and Female Subjects

Gender	Handicap Size	Poliomyelitis	Cerebral Palsy	Dwarfism	Amputation	Spinal	Others	Total(%)
Female	Children's Clothes			2(67.0)				2(3.9)
	44	3(30.0)	1( 4.8)	1(33.0)			1(12.5)	6(11.8)
	55	1(10.0)	3(14.3)			1(16.7)	1(12.5)	6(11.8)
	66	3(30.0)	4(19.0)		1(50.0)	4(67.7)	3(37.5)	15(29.4)
	77	1(10.0)	9(42.7)			1(16.7)	2(25.0)	13(25.5)
	88	2(20.0)	4(19.0)		1(50.0)		1(12.5)	8(15.7)
	Total(%)	10(19.6)	22(37.3)	3( 5.9)	2( 3.9)	6(11.8)	8(15.7)	51(25.5)
Male	90		3(10.0)	1(33.3)				4( 2.7)
	95	6(27.2)	12(40.0)		4(23.5)	11(32.3)	9(20.9)	42(28.2)
	100	6(27.2)	10(33.3)	1(33.3)	8(47.0)	16(47.0)	18(41.9)	59(39.6)
	105	8(36.3)	5(16.7)		3(17.6)	6(17.6)	14(32.6)	36(24.2)
	기타	2( 9.0)		1(33.3)	4(11.8)	1( 7.1)	2( 3.2)	8( 5.4)
	Total(%)	22(14.8)	30(20.1)	3( 2.1)	19(12.8)	40(26.8)	51(34.2)	149

The sizes of the male subjects show averagesizes. Purchasing ready-made clothes may result in a good fit but may lead to complaints in the size.

### 3) Clothes Material

The study of the materials of clothes showed textile with good texture highest at 33.5%, wrinkle free at 21.5%, good absorbency at 19%, elastic material at 10.5%, good washability at 9.5%, sturdy textile at 4% and decent looking textile was preferred as other categories. The male subjects

preferred textile in the order of texture, wrinkling and sweat absorbency and the female subjects preferred in the order of texture, sweatabsorbency and wrinkle-free.

The most preferred pattern of clothes by the study subjects was a single color and geometric stripe patterns, fine patterns, nature patterns and large patterns were preferred in the order. Softness was preferred as the clothes texture. White, blue and black were preferred in the order for the color while yellow, gray, red, pink, beige, purple

**<Table 5>** Improvements Required for the Handicapped

	Design	Color	Material	Size	Others	No-response
Male	29.6	8	16.8	32.9	6	2.7
Female	25.5	5.9	17.6	45	5.9	2

and green were preferred in small numbers. Contrast of similar colors that are different but in the similar line was the preferred color scheme for upper garments and pants by handicap. Zippers, buttons and Velcro were most preferred as fastening components.

### 5. Improvements on Clothes for the Handicapped

As seen on the <Table 5> above, 36% of the respondents answered size to be the most prioritized problem when improving clothes for the handicapped and 31.5% answered design, 17% material, 7.5% color and components.

Male subjects wanted the improvements in the order of design 29.6%, size 32%, material 16.8% and color 8%. Female subjects wanted the improvements in the order of size 45%, design 25.5%, material 17.6% and color 5.9%. Other design improvements requests include proper wedding dress designs for the handicapped and dwarfism handicapped requested design improvements due to many inconveniences though they wear children's apparel and shoes. Left hand paralyzed wanted a design enabling them to use inside pockets as it is not possible use the inside pockets. One hand users wanted alternative components such as buttons instead of zippers.

## V. Conclusion

Following conclusion could be reached after analysis of the research problem set for the research goal put forth regarding general issues and the current state of apparel life of the handicapped by the questionnaire research of clothing and purchase behaviors of the handicapped.

1. Analysis of the problems in clothing by the handicap area of the handicapped showed lightly handicapped felt in average below 10% difficulties

in everyday life. The degree of the inconvenience include clothes being dragged while using toilet and 11% showed clothes getting dirty often during dining. Cerebral palsy, amputee and hemiplegia handicapped have much difficulties in opening and closing clothes due to a single hand usage. The biggest issue was found with the dwarfism handicap in terms of clothing alterations. Among clothes categories owned by the handicapped, most discomfort was felt in the order of everyday clothes, workout clothes, underwear, athletic shoes and working clothes.

2. The analysis of the preferred clothes material and preferred clothes styles shows the following result. Most of the dwarfism handicapped wore children's clothes at 67% and size 44 was shown to be most commonly worn. The average size of the female subjects was 66 and male subjects were 95 or 100 and ready-made clothes were mostly worn. Clothes that fit properly and comfortable to move in were wanted and relaxed styles to cover up handicap area, decent styles and unique styles were preferred in the order. Preferred clothes materials are materials that feel soft, have good texture and have good absorbency. Contrast of similar colors that are different but in the similar line was the preferred color scheme. Zippers, buttons and Velcro were most preferred as fastening components.

3. Following apparel improvements were wanted by the handicapped. Most wanted improvements were in the order of sizes and the designs. In addition, they wanted to wear clothes sensitive to trend that do not show the handicap area. Many other requests include underwear designs easy to dress and undress as underwear is difficult to do alterations. proper wedding dress designs for the handicapped and pockets to replace the inside pockets for the left hand paralyzed.

Fragmented requirements of apparel for the

handicapped were found from the above results. Among the handicapped, only 14% wears tailored clothes fit to their physique. The financial burden is too great to wear tailored clothes in the current market system. Especially, the difficulty is big for the dwarfism handicapped.

There are four vocational schools under a government invested agency, Korea Employment Promotion Agency for the Disabled, which runs vocational education programs in various fields for handicapped teenagers and finds them employments. Among them, the lightly handicapped get employed and live among the non-handicapped but it is difficult for the heavily handicapped with fair functions in both hands but difficulties in moving around due to lower body paralysis to get employed because of the poor work place conditions. They can become excellent skilled workers if only work places with ramps or elevators are provided. It is suggested that the government or municipalities establish and run protected workplaces or independent workplaces for those who have studied apparel because employments can be recommended for the heavily handicapped and the handicapped in need for special clothes can purchase the clothes at the cost. As the follow up, many researches are considered to be necessary such as researches on the each different physique, works on standardizing clothes and segmenting sizes and solutions to manufacture custom clothes by handicaps.

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